THE

SOUTHERN AGRICULTURIST.

FEBRUARY, 1832.

PART I.

ORIGINAL CORRESPONDENCE.

ART. XI.—*An Address delivered at the first meeting of the St. Simons Sporting and Agricultural Society: By the President*, JOHN COUPER, Sen.

Gentlemen,—I beg you to accept my thanks, for the honour you have conferred on age, by appointing me your President, for the first quarter; and I congratulate you on adopting republican principles, by rotation of office.

I am grateful to the Almighty dispenser of blessings, that though past the age of man I am able to meet you here in social intercourse; and it is no small satisfaction to see on either hand a friend of half a century's standing.

Our island, gentlemen, is pre-eminent in the history of Georgia; here the gallant Oglethorpe established his quarters; and here he fought, and defeated, a superior Spanish force, sent to destroy the infant colony of Georgia. In my younger years I had the happiness to know several of the cotemporaries of that great man: the island of St. Simons was never mentioned without exciting a glow of delight in their veteran countenances.

Frederica (now in ruins) was spoken of by them as a terrestrial paradise, they loved to dwell on its *pleasures*. Its *mall*, its *race-course*, and its *amusements*, were all delightful reminiscences.

Where we are now met, was a place for summer recreation; under the shade of that venerable oak, (whose evergreen branches expand over near an acre of land) the officers of those days amused themselves, and enjoyed the cool breezes of the ocean.

In more recent times, our island became proverbial for the hospitality of its inhabitants: those who gained us that good name, are gone "to that bourne from whence no traveller returns:" this fair inheritance devolves to us, and I trust will be supported.

We are also esteemed abroad for maintaining a respectable Church establishment; let no sectarian prejudices (the bane of true religion) disturb the harmony of our present institution. We are all Christians, let us, therefore, in Christian fellowship and forbearance, accord together, and thus preserve a blessing that confers upon us order and happiness at home, and respect abroad.

In small societies, like ours, local laws are often infringed with impunity, because no individual likes to prosecute: let it be our duty to see them enforced, and to discountenance offenders.

Gentlemen: this Society is, in a more especial manner, intended for the improvement of agriculture, and its concomitant pursuits: I trust at future meetings our members will freely communicate their opinions and experiments on those subjects.

Horticulture can not be separated from the former. From our orchards and gardens we derive double advantage; first, from the pleasure of cultivation, and again, from the satisfaction of seeing our friends and families enjoy the *fruits* of our industry.

We hold a middle situation between the climes of the north and south; some productions peculiar to them, do not succeed with us—yet we have no cause of complaint. The peach, nectarine, apricot, and plum, are not surpassed: melons, figs, grapes, oranges, and olives, are no where found superior. Our soil is peculiarly adapted for the production of esculent roots and vegetables. To have them in perfection only requires due attention to the seasons suitable for sowing and planting.

In short, gentlemen, we have abundant cause to be satisfied. Our climate is healthy and pleasant: our winters are mild: and summer-heats are tempered by the sea-breezes.

The ocean on one side, and rivers on the other, afford us easy access from abroad, and furnish our tables with their delicacies. Our soil, though light, is productive, and admits of every improvement. — And, above all things, we ought to be thankful that no petty dissentions disturb our society.

That this friendly association may long contribute to good feeling and be a bond of union amongst us, is my humble prayer.

JOHN COUPER.

St Clair, October 26, 1831.

ART. XII.—*On the Improvement of Southern Agriculture: By* ABRAHAM GEIGER.

"November 10, 1831.

Dear Sir,—I must beg you to excuse me for not complying with the promise which I made you several months ago, which was to give you my thoughts on agriculture, and my idea of the best mode by which the agriculture of South-Carolina might be improved and encouraged. I will now endeavour to redeem that pledge. A knowledge of agriculture is not so easily acquired, nor is it so generally understood as is believed. This will be readily acknowledged by all who have the most profound and practical knowledge of the business. That there is a great want of a knowledge of agriculture must be manifest to any one who will take a view of our planting establishments. It is not unusual to see landed estates, as well as personal property, changing owners. This must be owing to one of two causes, or perhaps to both, namely, a want of a knowledge of agriculture, or of economy. An error in the present state of agriculture consists in an overreach in planting. It is as hurtful to the planter as the rot in his cotton. It is in consequence of this that plantations suffer for those necessary improvements which they yearly want. All practical planters will agree with me in this. If so, why

not plant less? If we will examine what the face of the State was thirty years ago, and what it is now, we must acknowledge that there is an absolute necessity for a different mode of cultivation. At the period above-mentioned it was only necessary to clear lands and plant; and this required little skill. The high prices of cotton held out such inducements to the planter, that all lands that were accounted good for cotton were hunted up, purchased at any price, cleared and settled, (if I may be allowed to say settled.) This was no little disadvantage to the State in one point of view. These lands have now become worn, and, comparatively speaking, unproductive. We are now under the necessity of doing one of two things; either to go to new States and fell the forest again, or adopt a different system of cultivation. I can say from experiments which I have made in raising wheat and corn, that if planters will plant but one-half of the land which they are generally in the habit of planting, and manure that highly, and work it better, they will make as much as they do from double that quantity of land, and at the same time have an opportunity of making those improvements and repairs which are so necessary to the comfort of man and beast. I have, for the two last years, planted only one-third of the lands I formerly planted in corn, and make more than I did from three times the quantity before. If I, who possess but a small share of the knowledge of planting can do this, surely those gentlemen whose minds have been enlightened by science, and deeply imbued with a knowledge of agriculture, can do much more, could they be persuaded to adopt the same system. But the old, miserable mode of planting has become a habit in the planter, and like a contagion, spreading far and wide, has affected small farmers, and will require time to expose and put it down.

I will now proceed to give you my mode of raising corn and wheat. I have (merely for family use) sowed yearly in wheat ten acres of land, on which I applied six or eight wagon loads of stable manure, and three loads of cotton seed. From experiments for several years, I found that these ten acres of land did not yield an equivalent for the labour expended. The plan I now adopt is this:— I lay off three acres of land (which is a part of the above-mentioned ten) and prepare it well. Wheat land ought to be finely ploughed until it becomes well pulverized. I

haul on these three acres six loads of stable manure and two loads of cotton seed, have it dropped in small heaps over the whole, and then have it strewed regularly over the land by hand. When manure is irregularly applied to wheat land it proves a great disadvantage. My land being thus prepared, I sow my wheat broadcast, and plough all under. If my land is not sufficiently level for the cradle, a light harrow follows. These three acres thus prepared and planted, have yielded me as much again as the ten did before. I wasted my manure on the ten acres, incurred additional labour in ploughing and reaping, with the loss of seed wheat. The seasons both years were equally good.

Planters of Carolina! it is a duty imperative upon us to give to each other all the information we are in possession of on agriculture. We have an easy medium of communication through Mr. Legare's valuable 'Agriculturist.' Let our efforts from this time be directed to this point—to understand how to raise the greatest quantity of produce from the smallest piece of land with the least amount of labour. Let us consider this the beauty of planting.

As I have been infected with the malady of over-planting of corn (as I was of wheat) I have, for several years past, adopted more and more the farming principle, and now plant but very little more than one-third of the lands I formerly did, and make more. I will now give you my mode of planting corn. Before Christmas I break up my lands by a deep ploughing, and let it remain in that state until the first of March. I then throw it in beds six feet apart. When ready for planting, I draw a fresh furrow lightly in the alley, or (better understood) in the last furrow the plough made in throwing up the bed. I plant my corn in drills, at two feet distance, giving 105 stalks to an acre's length, and cover lightly. On each hill I put one handful of rotten cotton-seed, or double that quantity of stable manure. The corn comes up through it. As soon as my corn gets its fourth leaf I plough; four or five days after, I follow with the hoe and give it a light moulding, and thin it to one stalk. When ten or twelve inches high, I plough again; in four or five days I follow with the hoe and give it a good moulding. The same routine of work is performed when the corn is waist high. The fourth and last ploughing is performed when the corn is tasseling and silking. In a few days after, I

give it a handsome ridging. The bed is made four feet, the alley two feet. Great attention should be paid at all times in keeping the beds as level at top as possible. If particular attention is not paid to this, the beds are apt to be drawn up rounding. This is the mode I follow in the planting and working of corn, and can only say that I raise a plenty, and believe that it does not require as much labour in making this quantity, as by the system of cultivation which I before pursued.

I now proceed to give you my thoughts on the best mode by which the agriculture of South-Carolina might be improved and encouraged. I have often regretted that agriculture was not encouraged and fostered by the Legislature. It is the nerve and life of the State; the support of the human family. Take from the State its agricultural interest, and what is she? Where has she commerce? Where manufactures? Why agriculture, (a knowledge of which is so absolutely necessary) should be left to contend for itself, I cannot conceive. I verily believe, that if agriculture and economy was better understood we should have much less poverty and misery in the world. It has been proposed, in our Legislature, to establish a Professorship of Agriculture in the South-Carolina College. Why not choose a city in the Moon? An institution of this kind, in my opinion, ought to be in a healthy, retired section of the State—far from the fumes of a town or country village.—That in this institution, a good English education ought to be taught for the benefit of the poorer classes of young men, and agriculture practically, as well as scientifically. This institution would be a nursery from which gentlemen might, in the course of three or four years, obtain young men well qualified to take charge of their planting interest. Without this necessary preparation, what sort of men are employed? Some without the least pretentions to moral character. Some so ignorant of their business as not to know a harrow from a plough; or if so, not the use of them. An institution of this kind would be a desirable place for gentlemen to send their sons, if but for six months or a year, to become in some degree acquainted with the planting operations, which they at no distant time will manage and control. Under existing circumstances, they are, to a certain extent, precluded from giving their sons that instruction in agriculture which they would desire.

To send them to a plantation for instruction, prudence forbids. I am persuaded in my mind, that if the State should establish and patronize an institution of this kind, that it would not only be an advantage to the State, but would redound to its honour, provided the Professor would have the good of the State in view, and not his own personal aggrandizement. Again: this would give action to the pursuit of agriculture. It would give a tone to its character which it never had before. In its present state it is looked upon as rather dishonourable—as a business which belongs alone to the plodding part of the community, whose intellect unfits them for all other pursuits. I will below give a detailed statement of the expenses of an institution of this kind, as a practical planter would, who knows how he gets his money, and who is not altogether in the habit of "building castles in the air."

400	acres of land,	$500
4	mules, ploughs, and gears,	350
300	bushels of corn, and 6000 weight of fodder,	300
	Professor's house, School-house, Steward's house,—(to be good frames, weather-boarded and sealed,)	2,200
25	cabins, 16 by 12, each cabin to contain four students—(these to be good frame buildings, and weather-boarded, with stone or brick chimneys,)	2,500
50	mattresses,	250
100	pair of sheets,	150
100	pillows,	100
50	bedsteads,	100
	The board of 100 students for one year,	7,000
	Salary for Professor of Agriculture,	1,000
	Teacher of the English language,	300
	Servants,	200
	Clearing 100 acres of land, and splitting rails,	700
	Barn and stables,	300
	Contingencies,	500
		$ 16,450

The second year this amount would be diminished at least one-third. The third year the establisment, under a judicious management, would nearly support itself.

ABRAHAM GEIGER.

ART. XIII.—*Observations on the Culture of Native Grapes, and Farming: By* WILLIAM ELLISON.

"Fairview, Nov. 9, 1831.

Dear Sir,—I received your's of the 17th ult. requesting a supply of the seed of the Gama grass.* I think it is probable that the supply sent on by me from Columbia reached you before your letter came to hand. There is a great deal of that grass, in this part of the country, in the cultivated fields, and much has been destroyed by the planters of the *ancient regime*, or old school, regarding it rather as a pest than any thing else. The late proprietor of the place I now cultivate destroyed much of it under such an impression. I have, however, excited some curiosity and inquiry about it, and many are beginning to think it worth attention.

You ask me if I have continued my experiments with salt as a manure to the cotton plant. I have not. When I commenced the experiment, I lived on another plantation. The owner of the place I now plant offered it to me on such terms as induced me to sell the former and buy this. When I took possession, I found it in such a wretched condition, that all my efforts have been required in indispensable repairs. The same cause has operated against my attending to vines. I have never aimed at es-

* This request was made prior to our receiving the liberal supply which Mr. Ellison sent us, a part of which we still have for distribution. In the editorial note appended to Mr. Ellison's article, published in the last number, (page 8) our compositor caused us to say what it was not our intention. The seeds sent us then, as well as since, are the genuine *Gama* grass, and it was our intention to have stated this, instead of which *Guinea* grass was printed.—*Ed. So. Agricul.*

tablishing a vineyard, and have directed my attention to the native grape, to aid, as far as I could, the efforts of those who were engaged in the cultivation of the grape. I have found the native grape very difficult to propagate. I have devoted a considerable portion of my own time and labour in efforts to succeed with them, but as yet with little success. The cuttings and grafts require more time than I have hitherto been able to spare. The habits of the plant must be changed before it will easily propagate by cuttings, for although I have set out many hundreds of cuttings, I have never succeeded in getting one to live throughout the summer, and I have grafted many hundreds of them and have but two grafts living. Close attention to them, in watering, &c. might produce different results; but I have been unable to bestow so much attention to them. I have tried provining or layering with no better success, from the want of proper subjects to operate on. All the fine kinds that I have hitherto found were old vines, and they are too long and have too much old, callous bark, and too fine eyes to propagate readily in that way. I am induced to believe that no vegetables will propagate readily by layering, except such as have a considerable number of eyes, or joints, to serve as the germs of new systems of vegetation. The pressure of the earth likewise may act like a ligature to prevent the free passage of the sap in a long vine, in its progress to the extremities. It is likely that atmospheric action on the trunk and branches has a combined influence with the capillary attraction of the sap-vessels in the ascent of the sap and process of vegetation. I have found many provined by accident, where the vine has a bend of a few feet, or inches, dipping below the surface of the ground. The usual supply of sap being impeded at the spot, the vine throws out new roots to supply the deficiency; but if the same vine had been buried its whole length, leaving the younger branches above the surface, it would have died. I have severed some of them from the parent stock and transplanted them without success. Take as much pains as you please, and you cannot take them up with any considerable portion of their roots, without herculean labour, they are so much interlaced and entangled with other roots. You may find young vines in abundance in a condition to layer, but you may be at the

trouble of propagating a worthless variety. The surest resource is in the seed, and I herewith send you a few of an excellent kind found here, and mentioned by me in the 'Agriculturist.' I will, in the next summer and fall, if I live, procure the seeds of other kinds esteemed good, and send them to you.

I am more particularly anxious to introduce farming than any thing else, and am exceedingly desirous of changing my system, for I am well convinced that the country must languish under the present system, happen what will, in relation to federal measures. The cotton culture is gone from us of the interior as a source of wealth, for the regions of the southwest can grow it at a price that would beggar us. I think the culture of it must be abandoned to the large planters, who must plant less and take great care in the management of it, and make up in quality for deficiency in quantity; for those who make from five to seven bales to the hand can never prepare it in the best order for market, and the quality will be inferior.—The smaller planters must become farmers (and farming is at last the great foundation of national prosperity) or make silk, or opium, or wine, or such other things as time and circumstances may direct. I shall next year make a small attempt to cultivate the poppy, and propagate the Gama grass, and plant, to some extent, the Guinea corn. We need an abundant supply of food for stock. All things equal, as regards soil and culture, we cannot produce as much Indian corn to the acre, as those who live farther north, say within the parallels of 35 and 40 degrees of latitude. Guinea corn will make up the deficiency, and more, for I have heard of a greater product of the latter to the acre than I have ever heard of the former even in the most favourable situations in the United States. To effect a change requires expense, for we are all deficient in buildings, barns, &c., indispensable in farming operations; and the change occasions, for the first year, some curtailment of ordinary income, and it is this that prevents me from carrying my designs into speedy execution.

WILLIAM ELLISON.

Art. XIV.—*Further Observations on the more general use of the Plough on the Seaboard; by* A Practical Planter.

"Mount Vintage Post-Office, (S. C.) Oct. 20, 1831.

In continuation of the remarks on the more general use of the plough on the seaboard, I would further observe, that the horses, for other purposes besides employing them in the plough, will relieve much manual labour, for where horses are used wagons ought to be a necessary appendage. Suppose for instance, that lands are to be cleared, how are the rails or surplus timber to be removed, or how are the rails to be conveyed to any advantage, even to enclose the newly cleared lands, without this assistance? Manual labour is resorted to on these occasions, each negro (and they must be the best hands) carrying a couple of rails at a time. A four-horse wagon will convey at least sixty rails, which requires thirty hands; and in removing or repairing fences from one part of the plantation to that of another, where the distance is great, it is inconceivable, the time and labour that is saved, by those who have never employed these means.

In the lower country, when land is cleared, the trees are fallen in a parallel direction, as much as possible, and there left to rot, under the impression that it contributes, in some measure, to manure the land, and that the space taken up by these trunks of trees admit of cotton distance on each side of them. It is conceded that these trunks of trees will afford assistance to the plants immediately in their vicinity, but they are too far separated to act beyond locality, and they impede so much the work of the hoe, that I doubt the utility; as the hoe cannot pass under them, of course grass must be left, robbing the adjacent plants of part of the manure that otherwise would assist its product. A writer in one of your numbers, under the signature of '*Chatham*,' appears to have discovered a mode of disposing, if not of the largest trees, those of a minor description, viz. to be laid lengthwise in the alleys and bed over them, and plant on these raised beds. This is, I presume, a new thing in the lower country, as well as in the annals of Southern agriculture.

In the state of preparation alluded to, of course the plough cannot act; but, as the case is in the upper country,

all timber that is fit for rails is split up, and the residue burned, or laid aside for fuel; and if there are more rails than are necessary to enclose the newly cleared land, they will always be found useful in other parts of the plantation. The plough then can operate, which is universally the practice; and the newly cleared lands, from being free of grass, require less attendance both of plough and hoe than old lands, and not unfrequently will produce as much corn and peas added together as land of a similar kind that has been cultivated for several years previous, for the production of peas on newly cleared lands cannot have escaped the observation of every planter.

It has been a cause of much astonishment to some of our lower country friends, when they have visited the upper country, to find forests they have passed, the next season converted into a growth of corn and peas, and the attendance principally from the agency of the plough. I have myself made, on newly cleared lands, the first year, twenty bushels of corn to the acre, besides peas which were left for the stock, and this with two ploughings and two hoeings. I would now desist, Mr. Editor, from making any further remarks, lest I should be considered an enthusiast in the use of the plough, did I not think that I should leave the subject unfinished.

When the crops of corn are to be gathered in, how is it mostly done on the seaboard? by manual labour; each negro carrying (or as we say, toating) about two bushels of corn in the ear, a team of four horses and a wagon will convey forty bushels in the ear. What a vast gain is there in this item, as well as every article of heavy transportation. Another view may be taken of this subject, not less important than what has already been stated:—the health and increase of negroes—the plough and team relieving them from heavy and straining work, particularly as regards females. Policy as well as humanity should dictate this. Besides all this, what an opportunity is afforded by a wagon and team to procure manure to resuscitate worn-out lands, or keep others in heart. A one-horse cart is a poor makeshift in comparison to a wagon and team, the cart requiring nearly the same attendance, and will not convey one-fourth the load of a wagon.

The digression from this subject I hope will be pardoned, as it is irrelevant, still it may have a tendency to benefit

your periodical, and with this view, as well as that of the plain planter or farmer, it is introduced, without the most distant intention of giving offence. I agree perfectly with the Hon. Mr. Seabrook, whose production in the 'Agriculturist' I have read with much pleasure, that rhetoric should be as much avoided as possible in treatises on agriculture, as well as the introduction of scientific terms. The plain and unlettered planter and farmer is deterred from offering communications of practical experience from this cause. Hydrogen gas, oxygen gas, carbon, and all the other gases in their train, is as much understood as Arabic, or the language of Greenland; or what do they comprehend from the different species, genus, or classification of Linnæus or Willdenow, or of what consequence is it to agriculture where we were born, or "where our ancestors were sepulchred"? All our knowledge is from the result of experience, and we adapt our culture according to the soil, either in one product, or that of another, as is most suitable, without resorting to chemical tests, in which case every planter must have an instructor. I would, however, by no means, be understood, that scientific researches should be excluded, or refrain from such as have been brought into practice, but there are so many that have committed it to paper, instead of drawing their knowledge from experience, that I cannot better illustrate it than by the introduction of the following anecdote:—

Cupid being asked by a neighbour of his master's,—Why his master did not succeed in planting as well as his neighbours—"Ah massa, massa plant too much from the book."

A PRACTICAL PLANTER.

ART. XV.—*Observations on the Injury sustained by removing green Vegetables from the soil: by* H.

"Georgia, Nov. 10, 1831.

Mr. Editor,—One of the most remarkable facts which I remember to have seen in our agricultural journals, is that

stated by a correspondent of the middle or lower country of Carolina, published in the last number of your useful work. He affirms, that the eradication of pea-vines in a green state has so sterilized the land on which the crop grew, that its fertility could not be restored by several years of good husbandry. I do not quote his words, not having the pamphlet before me, but I cannot be mistaken in their import. As depending on the same principle, the writer alleges, on the authority of an old and experienced husbandman, that the clearing of woodlands in the summer, or when the leaf is in full verdure, will have a like deleterious effect on the maiden soil.

Supposing these phenomena to be authentically vouched, I can but regard their explanation as a desideratum of great importance to the Georgical student. Why should the removal of the entire plant so much more injuriously affect the productive properties of the soil, than of the top without the root, as in mowing pea-vines for rough fodder? The top, or vine and leaves of a common cow-pea is, on an average, from ten to twenty times the bulk of the root; yet it seems that all this may be safely reaped, whilst the extraction of the root is little less than ruin to the soil. Such a result, I am sure, could not be inferred from any pre-established facts in relation to the improvement and exhaustion of soils, with which I have ever been acquainted. Some of my neighbours, holding the same opinion as the writer, account for the mischief done to the soil by the eradication of green crops by saying, that "when the sap is up, the strength of the ground is in the plant, and this form of harvesting the pea-vine, or other crop, takes the strength from the ground." But to me, this philosophy is unintelligible.

I would respectfully ask of some of your enlightened contributors their views of the subject.

H.

ART. XVI.—*On the Culture of Turnip-rooted Beet and Salsafy for Summer; Ruta Baga and Long Red-Beet for Winter; by* THOMAS FULLER HAZZARD.

"West-Point, St. Simon's Island, January, 1832.

Mr. Editor,—The old year of '31 having now closed its varied round, and the present commenced, it behoves every votary either of the kitchen garden, or Flora's more brilliant department, to be "up and a doing." January and the succeeding months are the choice and favoured seasons to prepare for the summer supply. In February last I made an experiment with the salsafy and turnip-rooted beet, both did well; and we found them most excellent, and very ornamental to a table in June and July. The seeds were procured from the Messrs. Landreths of Philadelphia, planted in February; beets, two feet apart, (on small ridges) twelve inches from plant to plant; thinned out carefully and all vacancies supplied, so that the whole bed looked regular and grew well, the soil having been prepared in complete orthodox gardening, or if you please, *secundem artem.* Salsafy was planted at the same time, in drills, like unto those for parsnips, and eighteen inches from row to row—they also did well; and we have them now ready for any epicure who may chance, peradventure, to wander unto St. Simon's Island—the real paradise of Georgia.

In August last, I planted some of the long red-beet, they are now fully equal in size and flavour to any grown at the North: seeds were from the Messrs. Landreths, planted in the usual manner, twelve inches apart from plant to plant, four seeds in each drop, to be thinned out and supply vacancies, or "scraggy places," as Capt. Hall calls the New-York breakfast table. It is therefore made manifest that we can raise our own beets, both for summer and winter. O ye lukewarm and dilatory gardeners consider this fact. Repent; and from henceforth piously resolve never more to purchase yankee-raised beets, when you can positively grow much better yourselves.

At the same time I planted ruta-baga, two feet apart from bed to bed, twelve inches from plant to plant, several seed in each hill for transplanting. This I consider one of our most solid and substantial vegetables; it is universally

admired, both by man and beast. Solomon, of blessed memory, in his wisdom thought there was no new thing under the sun, but if he could now taste ruta-baga well prepared, methinks his opinion would be right marvellously confounded. This vegetable ought to be patronized by every gardener, it grows so easy—both top and bottom all good and eatable. Mine have been very fine, tender, and well tasted.

I regret to say the rhubarb and Swiss chard seeds you were so polite as to send me, have not done well. Although I took great care in planting; only two plants of the chard came up. I find, by experience, that this is one of the greatest inconveniences we have to contend with in our gardens; seeds which we pay a high price for, and come to us recommended, frequently disappoint our best expectations, and the season is lost. "Alas poor Yorick." — Mr. John Couper of Cannon's Point, St. Simons, the worthy President of our Sporting and Agricultural Society, is one of our best and most experienced horticulturists. He has promised to communicate on the subject, and there are many of us would be gratified to receive from him the results of his long, practical observation. It affords me much pleasure to say that most of my information has been obtained from this liberal and most generous horticulturist.

The flower garden, however, is my hobby, but I cannot be so Goth-like as to comingle the exquisite beauties of Flora with the more gross and luxurious dainties of Epicureus.

So a happy new year to you; and may each and all the patrons of the 'Agriculturist' come forth with the account of their actings and doings.

Health and greeting to you.

THOMAS FULLER HAZZARD.

ART. XVII.—*Result of an attempt to cultivate the Aracacha; by the* EDITOR.

It is known to the readers of this journal, that Mr. Gideon B. Smith of Baltimore, (editor of the 'American Farmer') imported last spring from Colombia a number of Aracacha roots, which, with great liberality, he distributed in different sections of the United States. This root is considered in Colombia as "the most useful of all the edible roots, being superior to the common and sweet potato," and has for some time attracted the attention of the botanists and horticulturists of Europe, and many attempts have been made to introduce them there, and as well as into the United States. These have generally been unsuccessful; in fact, we know of no place where they are cultivated with success out of South-America, except some of the West-India islands. The Chevalier Soulange Bodin states, that they are cultivated in the botanical garden of Montpellier, and flourish in that of Geneva. But whether as mere objects of curiosity, or are so acclimatised as to become useful, we are not informed. A plant may be cultivated with success in a garden, where proper care can be bestowed, to protect from cold or shade from heat, which cannot thrive at all if exposed to the vicissitudes of the climate. We believe no attempt to accomplish this in any part of the United States has been even partially successful until the present year. The Aracacha has long been on the catalogue of the Linnæn Botanic Garden, New-York, and we obtained from thence, in 1828, four roots. They all perished during the first summer:—being absent the whole time we know not to what cause to attribute their deaths. If Mr. Prince, (the proprietor of that establishment) has been successful in their culture in the open ground, he has not made it known to the world, (at least we have never heard of it); we are therefore induced to believe that he has not, especially as when we requested information he referred us to an article published in the 'American Farmer,' relative to their culture in Jamaica. The efforts now made, may therefore be considered as the first which have been even partially successful and which have been made public.

Some of the roots were sent on to the Massachusetts Horticultural Society, and by them committed to one of their members. He has reported an entire failure and expressed an opinion unfavourable to their being sufficiently climatised for any useful purpose, if at all.

Mr. Smith has been more successful. In the 35th number of the 'American Farmer,' p. 280, he gives the following account of his experiment:—

"*Aracacha and Quinoa.*—The editor of the 'American Farmer,' has the pleasure of stating, that his success in cultivating these new vegetables has been equal to his expectations. The aracacha has not produced many eatable roots; but it has done as well as any other vegetable of the kind at the first trial so far from its native soil and climate. It has produced about five times as many roots for planting next year, as were planted last spring, notwithstanding half of the original stock was destroyed by moles. The only difficulty now to be encountered, is the keeping of them through the winter. In South-America they are planted immediately after being taken from the ground, there being no winter there. Every expedient will be resorted to for their preservation, and if this difficulty be overcome, the great object of introducing this new vegetable may be considered as accomplished."*

We will now proceed to state the result of our attempt to cultivate them, and as this plant may at some future time become of importance to us, we hope we shall be pardoned for being minute in our account. It will be interesting, even should they never become objects of culture with us,

* Of the *quinoa* he gives the following account:—"The *quinoa*, notwithstanding the lateness of the season when the seed was received, (May 13th) *has ripened*, and yielded a fine crop. There can be no doubt now of its perfect adaptation to our soil and climate, nor of its being a most important addition to our agricultural products. The grain is adapted to all the purposes of common rice, and to many persons is superior to that excellent grain It is believed that it will yield a larger crop than any other grain. The only piece of ground we had unoccupied, was a poor, light, sandy soil; this, however, has produced abundantly—at a future time we will give the measurement of the ground and the produce. We tried an experiment, by planting a single plant in an old hot-bed, where it grew literally on a pile of rotten stable-manure. This plant occupies about four feet square of ground, but it it is not quite ripe—it is believed it will yield two quarts.

"In a week or two, we shall give the mode of cultivating these plants. As the quantity of seed is very small, the editor is determined to dispose of a portion of them in small parcels, that every person who wishes them may have some, This will enable them, after once or twice planting, to get seed for a crop. The aracacha roots will be disposed of twenty-five cents each, and the quinoa at twenty-five cents an ounce."

to know hereafter that their introduction was attempted, and what was the result. Moreover, publicity being given to all of these experiments, they will serve as guides to those who may may wish to undertake their culture.

Early in March, we received from Mr. Smith fifteen roots, which we had planted on the 26th in the following localities. Four roots (marked No. 1.) in a sandy loam, near the termination of a gentle declivity. This was chosen in order that they might not suffer from our spring droughts—they were guarded from an excess of moisture, by having a ditch cut within a few feet of them. The balance were planted in a garden, the corners of which pointed to the north, east, south and west. Three roots (No. 2.) were planted in the northern corner, near to a paling fence, and were protected on the northeast and northwest by it, and which afforded a shade to the plants in the afternoon from about three o'clock: the rest of the day they were fully exposed. Four roots (No. 3.) were planted in the southern corner, and were greatly protected from the sun, by a house to the south, a close paling fence to the east, and a large peach-tree to the west, in consequence of which at no time were they long exposed to the sun. Being perfectly open to the north, and with nothing overtopping, these plants enjoyed as cool and as favourable a situation as our climate would admit of. Two others (No. 4.) were planted in the middle of the garden;—the soil of the whole garden was light and sandy. A compost of equal quantities of *well-rotted* stable and cowpen manure was used.

When planted, most of them had commenced vegetating, and on 4th of April they were above ground, with leaves fully expanded. The month of April was exceedingly cool and rainy, whilst May, on the contrary, was excessively dry, more so than we ever recollect it to have been so early in the season. On our farm, where these roots were planted, the drought was so severe, that many vegetables in the garden perished for want of moisture, and many which we consider as best able to withstand such seasons, were so injured as not to recover their vigour during the whole season. The month of May, although dry, was generally cool; there were, however, some very warm days, during which the leaves of all vegetables were more or less wilted. During this trying season,

the aracacha were most luxuriant in their growth, and progressed rapidly, apparently totally unaffected by either heat or drought. There was very little if any difference of growth between the different plants. They continued to promise well until the middle of June, when we had some unusually high tides, which overflowed places not subject to inundation even in gales. These tides did us some injury, and though they did not overflow the bed on which No. 1 was planted, yet they penetrated into the adjacent ditch, the consequence of which was that one of the plants soon perished. Soon after there occurred heavy falls of rain, and all of these perished.

The year 1831 has, in the lower part of this State, been remarkable for the alternations of drought and heavy falls of rain. The winter had been unusually severe, and rainy; the last of February and March was, however, mild, and not more rain fell than was necessary for the purposes of vegetation. On the 16th April there occurred a most tremendous fall of rain, accompanied with much cold. During the month of May, there fell but one shower,* and vegetation suffered much, as before noticed. From the middle of June to the middle of July, there was scarcely a day during which it did not rain, and for many days, violently. From the 16th July to the 9th August we had no rain: the remainder of August and September were rainy, whilst October was just enough so for the purposes of vegetation.

It will be seen from the above statement that contrary to the usual course of the seasons, we had alternations of droughts and inundations in constant succession, and with scarce any intermediate stages, for from the time it ceased raining, it very often happened that not a shower fell again until the next deluge. These vicissitudes were extremely unfavourable to all garden corps, and it could scarcely be expected that plants which were cultivated here for the first time could prosper, when those long habituated to the climate perished. Notwithstanding, however, the aracacha grew well until July, when there was an evident decline, and which was most perceptible after the heavy falls of rain, which commenced in June—by the 6th of August, all on the low grounds had died, as well as one of those in the centre of the garden. By the mid-

* These remarks are, of course, applicable only to our farm and its immediate neighbourhood.

dle of September all in the garden perished, except those in the southern corner, which were protected from the influence of the sun by the house, &c. These plants were not exposed, we believe, to the direct rays of the sun more than three or four hours during the day, if so long, and from their situation the ground must have been as cool as it was possible for it to be during summer.

These plants grew as vigorously in the early part of the season as any of the others, especially during the dry weather, but appeared to suffer much less from excessive moisture. During the months of July, August, and the commencement of September, they remained stationary, perhaps on the decline; not one of them however died. Towards the last of September there was an evident renovation. The old leaves, which before had a sickly hue, recovered their healthy appearance, and there was a vigorous growth of young shoots and leaves. From this time, until killed by a frost in the middle of November, they were far more luxuriant than we had ever before seen them. During the summer we could not find more than five shoots. On a root we have taken up since the tops were killed, we have found sixteen large and distinct shoots, and a large number of smaller ones growing from these, with innumerable embryoes and eyes, which in a short time would have astonishingly multiplied the product of the plant.

It, perhaps, will be expected that we should give an opinion relative to this plant's being climatised, and its value. We cannot from this solitary experiment venture to give the least opinion. We have stated the facts as they were noted down at the time, and it will remain for each to form an opinion for himself. All of the plants flourished remarkably well during the early part of the season, and whilst it continued dry, but perished as soon as the heavy rains set in (except those noted.) From this we conclude that heat is not so injurious to them as much moisture, and perhaps it was both combined which produced the result. Over many I had scaffolds erected from three to four feet high, sufficient to shade them from the mid-day, but open to the morning and evening sun, also enjoying a free circulation of air. Some were thus protected from the commencement, whilst others received it at a much later pēriod. I found these of no avail. On examining those which perished, I found invariably that

the lower parts of the original plants rotted first. The crown (from whence issued the shoots) continued alive much longer, and the leaves and young shoots remained of a good colour, some time after decay had commenced. They appeared to thrive best in moderately cool weather, and were not affected by such frosts as killed tomatoes and other tender vegetables;—their situation, perhaps, may have aided in protecting them. We wish much that we had given these plants some protection during the winter; a very slight one we believe would have answered. Had we done so, we doubt not but that we would have been the first to have eaten of the matured aracacha root, in this State at least, if not in the United States. As it is we have partaken of one, though perhaps not in perfection.

This plant grows differently from any we have ever noticed. We were led to believe from the statements we have read, that it produced *roots* resembling a *cow's horn* in shape, and that these were the parts eaten, but if so, our's have failed altogether in this respect. We are inclined to think, however, that these statements are erroneous. The tuber, off-set, (or whatever it may be termed) which is used for propagation, resembles somewhat the arrow-root, and like it possesses several eyes; these are principally near the crown. At the base, or part where it is separated from the original plant, it produces a number of fibrous roots, and from no other part of the plant have we observed the least appearance of any. On examination we have found none of these exceeding one-eighth of an inch in diameter, but generally not half that size. The growth is altogether upwards. From the crown, shoot in the first instance, several single leaves, each indicating where will be a tuber; from the centre of the foot-stalks of these leaves arise others in succession, which were enveloped by those preceding—for the plant is *endogenous;* in the course of time tubers are formed, which again produce others from their sides, thus forming a very large cluster on the top of the original plant, which does not increase proportionably in size. One of those which we have recently examined, and which was about two inches in length and one in diameter when planted, has increased only to four in length and one and a half in diameter, whilst at the same time it has produced sixteen shoots or

tubers, varying from three-fourths of an inch to three inches in length. It was the original stem (or plant) after being divested of all the young tubers, that we had cooked; we found it extremely tender, very delicate, a little mealy, and having the flavour of the Irish potato and celery combined. Whether such is the taste of the young tubers when in perfection, we hope to determine in the course of the present year.

A part of our plants we took up soon after their tops were killed by the frost; two of these we separated (the young tubers from the parent, and from each other); and one we left entire as taken from the ground—these were packed away in dry sand and placed in a potato-cellar. One plant we permitted to remain untouched in the open ground, merely drawing a little earth over the crown to protect it from frost. On examining these plants to-day, (Jan. 17, 1832,) we find that the one left in the open ground, has shot out several leaves, which will in a few days protrude through their covering. The plant which had been left entire and packed away in sand, has also commenced shooting. Those which were first separated and then packed away, remain as at first. We have separated the tubers from the one which was entire and planted a part out; the remainder we shall preserve for future use. From what we have seen of their growth, it appears to us that it would be advantageous to earth them up. This we shall try with some, whilst others shall be left undisturbed. We will vary our experiments as much as possible, and endeavour to ascertain in the course of the approaching season, what probability there is of the aracacha ever becoming of value to us. Should it become so climatised as to be cultivated in the open ground freely, it cannot fail to be of immense value; its present indications are that it will prove very productive. For some interesting particulars respecting th's plant, we refer our readers to the article from the pen of Gen. H. A. S. Dearborn, vol. iv. p. 322.

Art. XVIII.—*Proceedings of the Horticultural Society of Charleston.*

The winter exhibition of this Society was held on the 18th January, at Seyle's Long-room. This may be considered as the first, for although premiums were offered last year, yet the spring was so unpropitious that it was deemed inexpedient to hold it. The first part of the present winter has been so severe and unusual, that it was much feared even this might prove a failure. We were, therefore, agreeably disappointed, when we saw so good a display as was exhibited on the 18th. The vegetables were few, it is true, but generally very superior. They consisted of cauliflowers, cabbages, turnips, lettuces, carrots, beets, salsafy, variegated borecole, kohl rabi, and celery. The cabbages were uncommonly fine. One sent by Mr. George Cox, weighed, when divested of roots, stem, and superfluous leaves, twenty-three pounds and a half. The six sent by Miss Muckenfuss, and for which the premium was given,* were very little inferior. Nor can we pass without notice, the cauliflowers sent by Mr. F. Winthrop, which considering the almost total failure of the crop were uncommonly fine, and would have been considered very good in a much more favourable season. The carrots were also excellent: between those offered by Mr. James Mathewes, (who took the premium) and those by Miss Muckenfuss, the judges hesitated some time, and finally awarded the premium to the former in consequence of their superior weight. The beets were large and of a very excellent variety, they were however much forked, which detracted somewhat from their appearance and merit. The lettuces were not good, in fact, they were the worst articles produced, but in extenuation of this it may be said, that very few persons can boast at this time of having any, all being destroyed by the late severe weather.

We had the pleasure of sending seven varieties of turnips, consisting of the *red* ruta-baga, Hanover, red-topped, yellow Scotch, yellow stone, yellow Maltise, and round black. As most of these are but little cultivated among us, and some are new, we hope we shall be pardoned for making a few remarks on them. The *red ruta-baga* resembles very

* Mr. Cox did not send the number requisite to entitle him to a premium: his was for exhibition only.

much the yellow variety, but we think is rather sweeter. The *Hanover* and *red-topped*, are both white fleshed, and have been cultivated among us for some time. The *yellow Scotch* is a beautiful and an excellent variety, possessing much sweetness and growing to a large size, the skin is yellow (as well as the flesh) except the upper part which is red. In shape it resembles the globe turnip, though we have found a large number resembling the *Norfolk* turnip. The *yellow stone* grows also to a large size, but we scarce think it equal in flavour to the early Dutch, and is certainly much inferior to the yellow Scotch; it has, however, the recommendation of being very early. The *yellow Maltise* is the most beautiful turnip we have ever seen; its colour is that of gold, and possessing a gloss which adds much to its appearance. We have been informed that it is an excellent variety for the table; having but few (owing to the seeds not vegetating) we were loth to make use them, especially as we had an abundance of other kinds. Of all the varieties, however, none attracted more attention than did the *round black*. The name perfectly describes it, being rounder than any other variety we are acquainted with, and the outer skin perfectly black. It is very rough, and thickly netted. In appearance the skin resembles very much the black radish, and until labeled, it was passed by all of the visitors as being unworthy of notice. They grow to a large size,*—the flesh is very white and peculiarly delicate. It appears to us to be one of the finest varieties we have seen this year.

The *kohl rabi* was not as good as that grown during the last summer by us. The salsafy was also inferior. The variegated borecole appears to us to be more curious than useful.

The following are the premiums awarded:—

For the	6	best	heads of cabbages, - to	Miss Muckenfuss,
"	6	"	beets, - - - - - - - - to	James Mathewes,
"	6	"	carrots, - - - - - - - to	do.
"	12	"	lettuce, - - - - - - - to	do.
"	12	"	kohl rabi, - - - - - - to	J. D. Legare,
"	24	"	Scotch turnips, - - - to	do.
"	24	"	turnips of any variety, to	do.
			for the yellow stone.	

The other premiums were not competed for.

* Those sent to the exhibition were much inferior to some we left for the purpose of obtaining seed.

We have thus given a hasty sketch of the late exhibition. We wish it had been better; and we hope our succeeding ones will be so. At this there was very little competition, and specimens were not sent of many articles for which premiums were offered. Although due notice had been given, yet many of our farmers appear not to have known, or forgotten the time. We trust that they will hereafter enter more into the spirit of it, and unite with the Society in their endeavours to improve our horticulture.

ART. XIX.—*Information requested relative to Sugar-Mills; by* A SUBSCRIBER *of Chatham County, Geo.*

"Chatham County, near Savannah, Geo., Nov. 24, 1831.

Sir,—Having made preparations for planting sugar-cane next year, I am desirous of procuring every information on the subject. I am most at a loss as to the proper mill to be used. The Hopeton sugar works are on too large and too expensive a scale for my views, and I even dread the expense of iron rollers. I have heard much of a very simple mill erected by your enlightened correspondent, T. Spalding, Esq. Being unacquainted with that gentleman, a fear of intrusion prevents my applying personally to him for information. It is said that nearly every part of Mr. Spalding's establishment has been effected by the labour of his own people; his impelling power being water, a reservoir of which has been dug in the marsh; and that his rollers (two in number and four feet in diameter) are formed of different pieces of live oak, like what in nautical language is called a "built mast;" and that those rollers are covered with, and brought to their requisite thickness by coarse paper and tar. This I would have considered impracticable, but from recollection of the extreme tenacity and hardness of "papier maché." From the well-known scientific intelligence of Mr. Spalding, I have no doubt that, in his hands, this substance will be so improved as

perfectly to answer the purpose. Mr. S. being known to be far above receiving pecuniary remuneration for the efforts of his genius, I cannot suppose that he means to secure by patent any return for his exertions. I therefore hope he may be induced to describe his mill (with a notice of his reservoir, its size, depth, &c.) in your useful work, for the benefit of his fellow-citizens.

I have little hesitation in making this indirect application to Mr. Spalding, as he appears unhesitatingly to communicate to you the result of his experiments and researches. I have read with deep interest many admirable effusions of his pen in your work, and especially a recent one, setting aside some absurd pretentions as to the introduction of sea-island cotton.

A SUBSCRIBER.

ART. XX.—*The Successful Planter, or Memoirs of my Uncle Ben; by an* EDISTONIAN.

(Continued from page 28.)

The first year of my Uncle's administration had now passed away, when he was left in the enjoyment of a very rich earning of his industry. One great object, however, he had left unattended. Upon this, the whole secret of his prosperity was built. It was a principle with him to have every necessary concentred within himself; for he well knew that no policy was so bad as that of having too much out-going, without much income. It was not the opinion with him, as with many others, that because a thing might be procured cheaper abroad, it should be procured abroad and not made at home; but looking forward to the future, rather than judging from the present, he saw, that if his suppliers could produce an interest that he could do the same, by pursuing the same course. With this view, my Uncle began to look about him for those who could work

as mechanics, and supply his demands. In some of the simplest trades he gave instruction himself; so that in a very short space of time he had mechanics about him whom persons would suppose had served an apprenticeship under a more expert master. In others, where he could not himself instruct, he took care to procure such men as could, and in the course of time the plantation needed nothing which it could not of itself supply. Its shoemakers and blacksmiths, its carpenters and wheelwrights, were all to be found about it. And such was the convenience of this system, that from only having his own business to transact, he soon became the artificer of the whole neighbourhood. Whenever he found a poor mechanic thrown out of employment, he would take him to live on the premises, and by placing apprentices under him, he became master of most kinds of workmen. My Uncle was not ashamed to learn those trades himself. On the contrary, he grew quite inquisitive, and in this manner never failed to learn the true principles of every thing that passed under his view. It was thus that he gained a liberal knowledge of most of the arts and sciences of life, and was esteemed the agreeable gentleman in every company. Nothing with him was ever considered too low for aim to learn something about. And he hath often observed, I think with much truth, "That it is the knowledge of these apparently little and mean occupations that would alone distinguish the man of science, if thrown destitute upon the world." "When I look over this globe (said he) I see that it is not the acquirement of showy talents that has improved and civilized it; that has gone into the forest and converted its surface into rich fields of harvest; that has turned the turbulent ocean into sources of wealth, and made nature the great contributor to man's comforts. Yes, it is the union of apparently small efforts that has done the grand work. The rain descends in small drops, yet its continued fallings refreshes and invigorates the whole earth."

My Uncle was not satisfied to gain only a practical knowledge of these things. He delighted to study such books as explained their theory; and was fond of applying the principles of every thing. If he went into his fields and saw his ploughs at work, he examined the mechanical principle by which they moved. If he looked at his plants springing out of the ground, he tried to account for the

process of their germination; and saw how they were fed so as to grow up to maturity. He looked to their manures, and analysed them chemically; and upon all such subjects he raised an interesting and instructive conversation for those about him. Those unaccustomed to reduce things to method, will doubt this part of my Uncle's history; but to establish its verity I only ask them to make a short trial of his plan. I am assured they will be gratified. Let them set out with his resolution, and they will be surprised to see how fast the work of improvement will go on.

(*To be continued.*)

ART. XXI.—*Observations and Queries; by* TYRO.

"Richmond County, (Ga.) Dec. 22, 1831.

Mr. Editor,—How far I may be useful or interesting to my readers I leave them to say. If a man was never to write or say a word till he had something that would dazzle or astonish either for profundity of research, or brilliancy of thought and style, I do not doubt but that essays would be very scarce, and that we would be a very silent race of animals.

I believe that there are many readers of your paper who could make valuable contributions to it, but who apprehend they would not gain great eclat, as they have no invention or discovery to make known which would place them on a list with the renowned agriculturists of the day, and are thus prevented from writing, and we are deprived of the valuable knowledge and experience they possess.

Others again, from fear of criticism by their neighbours or acquaintances, are hindered from making known facts and experiments which we all would be glad to have. I think this the greatest cause why you have so few communications. If we are not the deepest skilled in the art of cultivating and improving the earth, yet we have thousands who are close observers and successful planters, and ought, as patriots, to come forward and give us information: but they dislike to appear in the public prints, &c.

There is yet a third class which I am rather of opinion is most numerous—they are the lazy sort; men who possess large stores of experience, who are active and enterprising in their agricultural pursuits, yet are too slothful to give an hour or two to the good of their distant fellow-citizens, or have a hatred to thinking, which would be necessary for one to do who puts his experience or sentiments in writing. 'The Southern Agriculturist' is for the South, and we want southern experience. We, as a southern people, want southern aid. Cotton is at too low a price for us to get rich, but we must live. These observations are made so that those who read and do not write may place themselves under one of the three classes, and acknowledge the fact, and no longer remain silent, but give me and the public, through the medium of Mr. Legare's paper, information on these or any other subjects, viz:

What is the best method of managing sows, from two weeks before they pig, till the pigs can crack corn?

What is the best and most economical mode of raising hogs?

When is the proper time to plant, and which is the best way of raising a crop of pindars, or ground pea? Is it a profitable crop?

I want a full account of the manner of raising strawberries on sandy land.

When is the proper time to plant cotton in the up-country? From the 1st to the 10th of April is the usual time, but is it not better to plant later so as to avoid frosts?

I want a practical essay on the best rotation of crops in the middle country of this State, or South-Carolina.

I am very desirous to know in what way to improve land by the cowpea.

Is slightly rotted compost a good manure for cotton? or does cotton do well upon a list of grass, leave and stalks, which is listed in January, February, or March, and the cotton planted on the beds in April?

TYRO.

XXII.—*Correction of Errors relative to the Gama Grass; by* WILLIAM ELLISON.

The following letter from Mr. Ellison was received after his communication at page 64. The greatest error is, as he supposed, typographical, and was corrected in a note prior to the reception of this. As other errors are, however, pointed out, we insert his letter entire.—*Ed.*

"Fairview, January 14, 1832.

Dear Sir,—On reading over my last communication, as published in the January number of the 'Agriculturist,' on the subject of Gama grass, I find in a note the following observations: "The seeds sent us by Mr. Ellison are of the Guinea grass;" and in the cover of the December number the receipt of Gama grass-seed from me is acknowledged. Which is correct? If you have received any Guinea grass-seed they were not sent by me, for I had none to send. Such seed as have been shewn to me as the seed of Guinea grass are totally different from those sent by me from Columbia. I have had means of comparing the seed of the Gama, sent to Columbia by Mr. Magoffin, with mine, and find they are the same. I presume there must be a typographical error in the note. I must also take this opportunity to correct several errors in the body of the communication, as printed. In the third page, or page 7 of the number, it should read "melioration and improvement." In the following page it reads, "as there is no doubt of their being the same;" the "as" is surplusage. In the next page it reads, "and it is found in greater quantities in Dutchman's creek," &c. it should read—*on* Dutchman's creek. Immediately below, it reads, "it may be found in many other places," it should read—and it may be found in many other places. At the top of the next page it reads, "for there is a tail of country;" any one I should suppose would know that *tract* of country is meant. In the next page it reads, "as regards the height and vigour;" the word "the" is unnecessary. The last is at the close of the piece, where it reads, "on the advice of Horace to the voluptuary Epicurean;" it should read—voluptuary or epicurean.

WILLIAM ELLISON.

See Vol 5. p 5. 169.

PART II.

SELECTIONS.

Art. VIII.—*On Planting.*

[FROM THE LIBRARY OF USEFUL KNOWLEDGE.]

(Continued from page 40)

The *stem*, *trunk*, or *bole*, constitutes the principal body of a forest tree. It is the medium of communication between the root and the branches, leaves, flowers and fruit, or seed. By the exercise of this function it obtains its yearly increase of substance, marked by the white circular lines apparent on the transverse section of the stem of every species of forest-tree. By counting the number of these circles the age of the tree may with certainty be determined.

It was before observed that the structure of the root was similar to the organization of the stem and branches; but a more particular notice of the constitution of the wood was referred to in this place.

A close examination* of the horizontal section of the wood of a trunk or branch of a tree, will exhibit two very distinct appearances.

1st. A series of white and shining laminæ, which radiate from the pith to the bark.† These generally straight, or sometimes interrupted lines, are termed the silver grain, or medullary rays of the wood. These vary as to size and arrangement, termed primary or secondary rays, continued in one straight line from the pith to the bark, or interrupted and broken in the course of their direction, according to the species of tree which affords the wood in question. They appear to be composed of cellular tissue, and to originate from the pith, in a word are a linear latera lextension of that organ. These medullary rays are elastic

* With a common or four-power microscope. A thin slice of the substance is, perhaps, the most convenient for examining When placed under a high magnifying power, the beauty, order, and arrangement of the tubular and cellular texture, will reward the observer.

† These should be examined with a magnifying glass, for the texture of the different woods exhibited will thereby be more satisfactorily compared with the descriptions which accompany them.

and contractile, as is evident to every one who has observed the effects of the extremes of dry and of moist weather on a section of a felled tree.

2d. A series of concentric layers, or circles, termed the spurious grain. These consist of tubular vessels of smaller or larger diameters, arranged in lines or groups varying according to the genus and species of the tree to which the wood belongs.

An examination of many different kinds of wood proves that these characters of distinction are constant, and, therefore, afford a certain means of distinguishing the wood or timber of one species of tree from that of another.

The following discriminating characters of the woods of the principal timber trees will be found constant:—

The wood of the elm is distinguished by having the medullary rays, or silver grain, equal, and not crowded. The concentric layers are composed of a series of cells of nearly unequal diameter, arranged in an almost simple curved line. The spaces between the layers are furnished with cells of a smaller diameter, and rather thinly scattered over the surface.

The oak has two series of medullary rays; the primary ones are large and strongly marked, distant from each other, and are uninterrupted in their course from the pith to the bark. The secondary rays are numerous between the primary, but not crowded.

The concentric layers, or circles, are distinguished by the arrangement of the cells. They are grouped in somewhat triangular masses, forming a wavy circular outline. The structure of the concentric layers or annual rings, distinguish at once with certainty the wood of the oak from that of the chestnut, with which it has often been confounded.

The wood of the ash has the places of those rays so prominent on the wood of the oak, supplied by twin rays placed in wide intervals over the surface, and between these double rays are smaller ones, placed in regular order. In the narrow spaces between the individuals which constitute the twin rays are wanting those apparent remains of the cellular texture which are so remarkable in the spaces between the single rays.

The wood of the beech has the primary rays dispersed pretty regularly over the surface of a horizontal section of the wood; the secondary rays are not continuous from the pith to the bark, but interrupted, and exhibit a numerous series of fragments of rays, filling up the spaces between the primary ones, obvious to the naked eye, and rendering the silver grain, as it is called, of the beech very distinct from any other kind of wood.

The wood of the Spanish or sweet chestnut has often been confounded with that of the oak; but its characters of distinction are very obvious. It agrees with the oak in having the se-

condary rays equally disposed, almost straight, and, though close to each other, yet not crowded as the elm and beech; it differs, in the primary rays being scarcely to be distinguished from the secondary, whilst in the oak these are prominent and obvious to the naked eye on the slightest inspection. The concentric layers are regularly curved, whilst in the oak they are strikingly waved. The mouths of the tabular vessels, which constitute so obvious a part of these annual rings, or layers, are disposed in triangular masses in the oak; on the contrary, in the chestnut they are in regular order.

The hornbeam has the rays of the wood nearly equal, but may readily be distinguished from that of the beech, to which it bears the greatest resemblance, by the simple arrangement of the tubular structure accompanying the concentric layers, which in the hornbeam are distant and oval shaped, the narrow sides pointing to the pith and to the bark; in the beech they are circular shaped, more numerous, and equal sized.

The birch has all the medullary rays nearly equal, arranged closely, and having the concentric circles minute, but marked with a row of equal cells.

The horse chestnut has all the rays very minute, few of them apparently continuous, but interrupted, and in substance varying in breadth. The cells are numerous and minute.

Alder has the wood with large primary rays, thinly arranged, but in nearly regular order; the secondary rays are slender, numerous, and interrupted. The cells of the concentric layers are nearly regular. The spaces between the rays are crowded with cells.

Oriental plane has the primary rays regular, but closely arranged; they are somewhat wavy; the cellular texture of the concentric layers but slightly marked.

The sycamore in texture approximates to the plane; still, however, it is very distinct in its straight lined rays, which are very minute or slender. The cellular texture is composed of such minute cells as scarcely to be perceptible under a four power microscope; these cells are, however, very numerous.

The poplar has the wood composed of rays so slender as not to be obvious to the naked eye. The concentric layers are composed of exceedingly minute cells. This wood is extremely porous; the cells of which it is composed are so numerous that a very thin slice of the wood, taken horizontally, exhibits the appearance of the finest possible open net-work.

Common acacia, or locust, has wood which bears some resemblance to that of the oak; but it is very distinct from any other kind mentioned here; it wants the distinct primary rays so prominent in the oak, the rays of the locust being all nearly of equal breadth, and as slender as the secondary rays of the oak; here they are somewhat wavy. The cellular or tubular structure is

also very different from that of the oak, being arranged in more regular order where they mark the concentric layers, and the spaces between the rays are furnished with many cells irregularly scattered over, of a size equal to those marking the concentric layers.

The wood of the fir is distinguished from all others here enumerated by having very prominent coloured concentric layers, arranged very regularly throughout; and the cellular texture, though composed of cells sufficiently large to be seen with the naked eye, is not to be distinguished without very close observation.

The lime has very slender equal rays and a minute cellular texture pervading the whole body of the wood. The concentric layers are scarcely perceptible to the naked eye. It may be compared to the wood of the poplar but the network-like arrangement of the cellular texture is not so obvious in the former; the presence of the rays in the lime distinguishes it at once from the poplar.

The wood of the laburnum is distinguished by its minute, regular, uninterrupted medullary rays, and by the broken beaded longitudinal lines of the tubular structure.

These characters of distinction being permanent and constant in all these different kinds of wood, will be found useful in cases where it is desirable to ascertain the kind of timber which may have continued sound for the longest period in any particular building or situation and the contrary where its duration has been limited.*

The *leaves* constitute one of the most important conservative organs of vegetable growth; for on the free and healthy exercise of their functions depend the life of the plant and its progress to maturity, to say nothing of that universal interest and pleasure which is afforded by the diversified beauty of their forms and tints. The green colour of the leaves of trees has been proved, beyond all doubt, to depend chiefly on the influence of solar light and atmospheric air. Almost every distinct species and variety of plant, in its most healthy state, has its own peculiar shade of green: the yellow-green tint of the foliage of a healthy larch, would in that of a pine, spruce, fir, and cedar of Lebanon, be certain indications of disease and decay. The dissection of a leaf shews that it is composed of vessels, cellular tissue, and an epidermis. The green part of a leaf is, in fact a continuation of the parenchyma of the bark before mentioned; and the midrib and nerves of the leaf are a continuation of the

*It would be of the greatest utility to the interests of planting were registers kept of the kinds of timber used in particular buildings; also the age of the tree which produced it, when felled, and the soil, and situation or climate, in which the trees were reared. Posterity would be grateful for such records of facts.

conducting and returning sap, and air vessels of the bark and alburnum. The under and upper surfaces of the leaf may be separated in an entire state from each other. These appear to perform different offices; the under surface is provided with numerous minute pores by which moisture and air are emitted and absorbed. The upper surface of the leaves of trees is supposed to be destitute of pores: this part always turns its surface to solar light.*

The leaves of forest trees are either simple or compound, simple as in the common beech, and compound as in the ash, where several smaller leaves are attached to one foot stalk. The foot-stalk of the leaf is terminated by a gland, which in deciduous trees, or those that shed their leaves in autumn, becomes indurated, and at that season readily separates from the branch or twig.

The midrib of the leaf is merely a continuation of the foot-stalk; this divides the body of the leaf longitudinally; it may be compared to the stem of the tree, for from it issue branches of various sizes, dispersed through the substance of the leaf in order resembling those of the tree. The first or largest series of fibres issue from the sides of the midrib, either in an opposite direction, alternately, or irregularly, according to the species of tree; from these secondary branches proceed a third and a fourth series, not however in such straight lines as in the former, but curving and anastomosing, or opening into each other in all directions, and, in this last particular, they have a resemblance to the disposition of the minute blood-vessels of the animal economy. The difference in the disposition of the first and secondary fibres of the leaves is so constant in the individual plants of different natural genera, that it affords a very clear discriminating character by which they may be distinguished from each other, in the same manner as the wood of different kinds are identified by the concentric circles and medullary rays before mentioned.

The leaves of the oak (Quercus) have the secondary fibres few in number, and curved towards the sinuosities of the leaf; the third series of fibres are very prominently marked, and the fourth series extremely minute. The leaves of the Spanish chestnut (Castanea,) belonging to the same natural order but to a different genus, have the secondary fibres nearly straight, the third series very numerous and curved alternately, the fourth series nearly as large as the third, and if we examine and compare the wood of the oak and the chestnut, we shall find equally marked distinctions between them.

* For a minute and interesting account of the varied forms of these pores, and of their number on different plants, see Part I. "of Vegetable Phisiology," published in the Library of Useful Knowledge.

In the beech (Fagus,) which likewise belongs to the same natural order, but to a different genus to the above, the secondary fibres of the leaves are very prominent, and the third and fourth series minute, and of nearly an equal size, and the texture of the wood is equally distinct from that of the oak and the chestnut.

That the leaves of plants during the day emit oxygen gas or vital air, and absorb carbonic acid gas or impure air, has long since been proved. In the night or during darkness, vital air is absorbed by plants and unhealthy air emitted, and it would appear by various experiments on this important point, that when the supply of carbonic acid gas from the air and soil is greater, the emission of oxygen gas by the leaves during their exposure to sunshine is also greater, hence another cause of healthy plantations improving the climate of their neighbourhood besides that of shelter.

The leaves of trees being the great organs for elaborating the sap and fitting it to become converted into all and every product of the tree, whether timber, bark, seeds, or fruit, render the facts relating to their structure and functions of high interest to the planter and forester; for they point out the danger of lessening their number beyond a certain extent, as in excessive pruning, or of suffering the leaves to be crowded too much, so as to exclude a free admission of light and air, as happens when trees are planted too close together, and judicious thinning and pruning are neglected.

The seeds of forest trees. Seed consists of three principal parts: 1st, The *cotyledons*, or seed leaves;—2dly, The *rostel*, or first radicle, which descends into the soil, and becomes the root of the tree;—3dly, The *plumula*, which ascends and becomes the stem, bole, or trunk. The rostel and plumula are closely united in the seed, and there constitute what is termed the germ, or embryo of the future tree. This is an essential part of the seed, for however healthy in appearance the seed may appear, if the germ be injured, the seed never vegetates. The cotyledons or seed leaves contain a farinaceous substance which is the source of nourishment to the radicle until established in the soil and fitted to perform its proper office in the developement of the stem and proper leaves of the plant. It may be useful in this place to mention, that the seeds of forest trees may be classed under the following heads or general characters, indicating peculiar points to be observed in the practice of sowing them.

1st. *Seeds farinaceous, and covered with shells, nut-seeds.* To this class belong the oak, Spanish chestnut, beech, horse chestnut, walnut, hazel, hornbeam, plane, sycamore, maple, and ash, to which may be added, though not strictly belonging to the group, the birch, alder, and lime. The first seven kinds, from the farina they contain, are least adapted for keeping out of the

soil, and the same cause renders them more difficult to preserve in the soil when sown, by inducing the attacks of mice, birds and other vermin. The spring is considered the best season for sowing, and the seeds must therefore be preserved carefully during winter; the most approved mode is to spread them out in their layers on a cool dry floor, but previously to this they should be thoroughly dried by the sun and air. The smaller kinds of seeds after being sufficiently dried, may be kept in a smaller space. The seed of the oriental plane *(Platanus orientalis,)* however, succeed best when sown immediately as it is perfected. When sown, these seeds require different degrees of covering in the soil. The larger seeds, as those of the chestnut, oak, &c. should be covered with two inches of mould; for the smaller seeds of the plane, sycamore, hornbeam, maple, and ash, it will be proper to mix with them sand, in quantity about equal to their bulk, placing the mixture on the ground a foot in thickness, and covering them with an inch thick of mould. The birch may be sown immediately as it is taken from the tree, or preserved in the seed-loft until spring. When sown, the birch is generally covered half an inch with mould, the former seeds with one inch.

2d. *Hard seeds, or stones covered* with a pulpy fruit. The proper covering of these seeds is so hard, as to have acquired for them the name of stones. In this class are the cherry-tree, mountain-ash, whitebeam, yew, holly, pear, crab, and thorn. With the exception of the cherry-tree, all these remain in the soil one or two years before they vegetate. To obviate the irregular vegetation of these seeds, which is attended with loss of time and inconvenience, the practice of preparing them for sowing by what is called pitting has been adopted; this is done in the manner above mentioned for the hornbeam, plane, &c.; but as one, two, or even three years in the pit or preparatory bed are wanted for some of these seeds, it is requisite after they have lain a certain time in the pit to uncover them and turn them over, so as to assist in the separation of the pulp from the stones. Holly berries require one year at least to prepare them for sowing; mountain ash, whitebeam, yew and ash, lie one year; the cherry readily vegetates in the same spring in which it is sown.

3d. *Leguminous, or bean seeds.* These as regards forest-trees are confined to the common acacia, or locust tree *(Robinia Pseud Acacia,)* the glutinous Robinia *(Robinia Viscosa,)* and the laburnum. These seeds vegetate freely when sown from the tree, but it is the general practice to preserve them until spring in a dry, cool place. When sown they require to be covered with about three fourths of an inch of mould. If sown too thickly, that is less than one inch seed from seed, the plants soon injure one another, and become diseased.

4th. *Light seeds.* Under this head, we enumerate smooth elm, and mountain elm, and poplar, and the tree willows. These

seeds being light, and separating freely from the tree when ripe, require care in collecting, as otherwise they are liable to be dispersed and carried away by the wind. They vegetate quickly and may be sown so soon as they are ripe. Spring, however, is preferred, as tender seedling plants are subject to injury from severe weather in winter. They should be covered to the depth of one fourth of an inch of fine sifted mould.

5th. *Resinous seeds* are those of comferous or fir trees. Their vegetative power, when cleaned or separated from the cones, is not to be preserved if they are kept out of the ground for any considerable length of time, and they require particular care in sowing. The soil of the beds ought to be of a light sandy nature, enriched with the vegetable mould of decayed tree leaves, or well decomposed dung. If a proper quantity of the former manure be added, and well incorporated with the sandy loam above described, it will bring that soil to a suitable texture. The seeds are borne in cones, furnished with scales of a hard woody consistence. The cones of the larch with much difficulty part from the seeds, and various means have been adopted to effect that object. The best is that of first opening the cone, or dividing it lengthways into two or four parts, then placing them on a kiln and drying by a very gentle heat until the valves begin to open, when they should be taken to a proper floor and threshed: the seeds may then be separated by a seive. The cones of the Scotch fir and the spruce, require also the aid of the kiln; but the seeds part from the cones easily, and the splitting of the cones is superfluous. The spring* is the best season for sowing these seeds. The soil of the seedling beds should be in as finely a pulverized state as possible for their reception.

The seed of the stone pine requires to be covered with one and a quarter inches of soil, the silver fir and pinaster with one inch, the Weymouth pine with three fourths of an inch; the Scotch fir, Norway spruce, balm of Gilead, and cedar of Lebanon with half an inch of soil. The cedar of Lebanon is best sown in boxes placed in a warm or sheltered situation. The larch should not be sown so deep; a covering of a quarter of an inch of soil suffices. The white, red, and American spruce firs, having smaller seeds, require a slighter covering of a fifth of an inch deep, and the texture of the soil should be even lighter, which can be easily effected by adding sand or a larger proportion of the mould of decayed tree leaves. Heath soil, or bog soil, containing a good proportion of fine siliceous sand, has

* If the winter happened to be favourable, and the depredations of vermin were completely prevented, the balance would be in favour of sowing the seeds of the fir and pine in autumn, and which would be the case also with every description of forest tree seeds, the hard or stone seeds probably excepted.

been found very congenial to the vegetation of these seeds.* Shading from hot sunshine is highly beneficial to them, indeed, indispensable in some states of the weather, for the thin covering of soil which is necessarily allowed them is soon affected by the action of the sun's rays and sudden drought quickly destroys the tender seedlings. The thickness in which the seeds should be sown, according to the respective kinds, is on an average from three to four on a square inch, so that the plants when produced, stand not nearer to each other than that scale of distances.

The artificial fine state of culture of the soil in the seed beds, rendering it less retentive of the due degree of moisture than is required, the beds should be consolidated before and after the seeds are sown either by the use of a roller, or by the spade.

In concluding this practical view of the structure of forest trees, and of these natural agents, which obviously influence the growth of plants, it may be useful to take a similar view of the process of vegetation. A perfect and healthy seed consists of an outer covering, cotyledons, radicle, and plumula. When sown in perfectly dry earth, it remains unchanged; if in an excess of moisture, it loses its vegetative powers and decays: in neither case it vegetates. When the temperature of the soil is below a certain point, all vegetation is suspended. Should the soil and the temperature be perfectly favourable to vegetation, yet if the seed be not planted shallow enough to be within the influence of atmospherical air, no vegetation takes place. Different species of seeds require different degrees of moisture, temperature, and atmospheric influence, to render their vegetation the most healthy and perfect. The natural constitution of different soils, as regards their respective properties of retaining or easily parting with moisture; the proper season of sowing, as regards the temperature of the soil and the atmosphere, by whatever local causes subject to be influenced; and the respective depths to which the seeds should be deposited in the ground, as above mentioned, apply directly to the skill of the cultivator to aid, modify, and assist these primary essential agents of vegetation; and on the right adjustment of these depend the success and just reward of the planter in his first stage of the process of his art.

(*To be continued.*)

* This description of soil has been erroneously supposed to be injurious to transplanted firs, and implements are used to remove the heath soil from the intended sites of the plants, in order that the roots may be inserted in the subsoil of gravel or sand, of which the subsoil almost always consists. The roots of the heath while alive are the cause of injury, not the nature of the soil.

Art. IX.—*On Grape Vines.—Plantation—Cultivation.*

[from the florida intelligencer]

The vine planted in any way will grow well for a certain time, but when arrived to the time of fruitfulness it will either reward the attentive and careful, or disappoint the uninformed or negligent. Here is an example of this:—In Greene county, a French colonist sold to one of my American friends a tract of land on which he had planted a vineyard of several acres, which grew well and luxuriantly for the three first years; after which period, the vineyard declined, the vines dying yearly. I was requested by my friend to go and see his vineyard I found his vines parched or dried up by summer heat; I pulled or dug up some of these, and even some of the living and discovered they had been planted as one would plant sallads or cabbages, and I supposed they were merely small cuttings stuck in prepared ground. Since, my friend replanted his vineyard which is now in good order. The reason of this appears to be, that, as long as the vine is not fruitful, it grows freely, and apparently requires much less moisture than after four or five years. In order not to meet with disappointment, is it not advisable to do things properly at once?

After selecting a suitable piece of land, as to soil and exposition, break it up well and deep, by several ploughings. It will much facilitate the plantation, and the ground so broken, divided or pulverised, will offer no obstacles or opposition to the quick growth of the roots of young vines. If a piece of land in its primitive state, and naturally poor, should be destined to become a vineyard, it would be well to manure it, and sow small grain in it for a couple of years. This preparation will greatly enrich the soil, which will then be in excellent condition for planting. Manure, when fresh, is contrary to the vine and the good qualities of its produce, but when spread so beforehand, it communicates none but its goods effects to the vine, as it has freed itself of the excess of its carbonic acid, and is no more, as it were, but vegetative ground combined with the soil that contains it.

The land must be laid off with regard to the nature of the plants selected; the distance must be proportional to the growth of the plants. The Madeira and Persian must be planted at distances of fifteen to twenty feet from row to row, and ten in the row, on straight lines in every direction, to facilitate ploughing. Mark these rows with small stakes; open ditches with the plough in the direction where the stakes are farther apart, in order, that, when arbours are built up, in the direction where the vines are nearer, the body of the vines and their roots, extending in the space between rows, may always receive the benefits of the

plough. Throw on one side of the ditches, with shovels or hoes, this first ground loosened; run the plough again in these ditches until arrived to the depth of eighteen to twenty inches, and throw this other ground on the other side of the ditches. Pass through the vineyard in this way, then square it off again with stakes calculated to last two or three years, or until the vines may require framing. Throw in the ditches three or four inches of the surface ground that was put on one side of the ditches and they are prepared to receive the plants, which are either cuttings or vines with roots. The cuttings must be four feet long, well chosen, well matured—cut on vines that have borne, the fruit of which is known. No tops of stems should be employed; therefore, if we desire four or six cuttings from a vine of common size, it is sufficient. In case of necessity the tops might be planted in nurseries, but it is seldom a proper measure to succeed or advance in procuring soon the plants needed. Having already taken the plants with roots in consideration, we will say nothing further about them. These plants of either discription must be laid in the ditches, the tops tied to their stakes with suitable ligaments, as lynn-bark, hemp, osier, &c. calculating to leave but one or two eyes out of ground, then bend the plants to the base of the stakes so as to form a right angle, and putting the foot on the vines draw enough surface ground on them to oblige them to keep this position; afterwards fill up the ditches with hoes or shovels. There is another way of planting the vine which is perhaps more expeditious—observe the above instructions, mark holes to the stakes three to four feet long, by 1½ to 2 wide; dig them with grubbing hoes, observing particularly to make them within the spaces of the rows intended to be framed, as the bodies of the vines should in every respect be so situated as to be ploughed over.

Table Grapes are commonly destined to grow on bowers, in a yard around the house, or in avenues; therefore they can be planted to suit fancy. The generality of vines imported from France into this country, grow slow, remain thin, and never form a large foliage; their weight is little, in consequence of which they require no framing or arbors, but simply small stakes six or seven feet long driven in the ground when necessary; at the head of each vine, or in the opposite direction in which the roots of the vine run. They must be planted at distances corresponding to their nature, four, six or seven feet apart on straight lines in every direction. A few of our indigenous vines require these narrow distances in their plantation. Althongh these spaces may appear small, many yearly plants may be grown in them, such as vegetables, beans, &c. they are large enough to admit the rays of the sun, and bring to maturity what may be contained in these spaces.

In Provence there is a kind of vine which we generally call the

Marseilles, which requires no arbors, props, or stakes, and thereby saves trouble, time and expense. It is knotty, uneven, and the distances between eyes short; it is firm and has a pyramidal form, and the strongest winds never blow it down. There it produces considerably, here it is very indifferent. However, if it were tried in some other latitude and soil of our States, it would perhaps succeed—its produce is claret.

The vine should be planted within the time of trimming, that is to say, from January to March. Nevertheless, it is proper to begin the preparation of the lands at any other time, the fall for instance.

Young vineyards require but little work and no expense, except that of planting. During the three or four first years, the land may yield almost any of the common productions of the country, without the least injury to the vines; provided, however, no such productions be planted or sowed nearer the rows than four feet, except small grain, such as wheat, oats, barley, &c. It is necessary to give vineyards two deep ploughings a year, and keep them clean, to tie up to the stakes or arbors all the limbs or stems that may fall and lay on the ground during the spring, summer and fall. It sometimes happens in this country that the rains of March impede ploughing; in this case the vines must be opened at the roots around the stock, to the depth of two to three inches, and the superficial roots that have grown through the summer, cut off close to the stock. This should not be neglected, as these roots readily receive the influence of the atmosphere, making the vines put forth sooner than they would otherwise, and thereby expose them to the late frosts. Where ploughing is practicable, turn the ground from the vines and follow the rows with a pruning knife, cutting all the roots uncovered by the plough. After a few days, plough once more and hill up the vines. CORNEILLE ROUDET.

Greene County, Florida, Nov. 12th.

Art. X.—*Cultivation of Indian Corn.*

[FROM THE AMERICAN FARMER.]

"La Grange. Oct. 16, 1831.

Mr. Smith,—The modes of cultivation and management of different crops, are perhaps as various as the dispositions and ideas of the cultivators; a few suggestions, notwithstanding, might not be entirely useless to those engaged in the cultivation

L. of C.

of Indian corn, so essential in almost every part of the United States. In the first place then, a selection of seed is of more importance than many are aware; such ears should be chosen for that purpose only as ripen early, and mature perfectly, giving the preference always to those stalks which have borne two or more ears the preceding season: under no circumstances, where it is desired to ensure a full crop, should early planting be neglected; why it is that so many planters defer this, till the very advanced season compels them to turn their attention to it, is a question which will forcibly occur to themselves, when once they have tested the advantages of a contrary practice. The whole course of my experience in agriculture, proves satisfactorily, that early planting has incomparably the advantage of late planting; the young corn may not look so well, when it first puts up, nor grow off so rapidly, still it roots better, stalks better, and will almost always bear more and larger ears, is less subject to the ravages of the cut-worm and depredation of birds, ensures a better and earlier *stand*, which, in all crops, is all important, &c. Land which is broken should in all cases be ploughed horizontally; to effect this, you encounter necessarily, some delay in the outset, but afterwards, you can reverse your beds, and plant again in the same way. If your fields are planted alternately in corn and cotton, (the southern system, beds four feet apart are suited to both crops, the distance in the drill being discretionary, depending on soil and locality, say from 30 to 40 inches apart. In general, there is nothing made by crowding this crop too much, and crowding it otherwise as you may, never more than one stalk should be left in a place; if, as sometimes happens, early corn is cut down by frost, it sustains no injury whatever therefrom, unless the cold has been so intense as to penetrate to, and injure the roots, which rarely happens, when the corn has been properly covered.

After the crop appears above the ground, no time should be lost in running over it with the hoes; this dressing is admissible much earlier than many suppose—it will, after this, grow more rapidly and vigorously, having the soil about its roots light, level and fine. So soon as the grain rots, and the birds no longer infest it, the operation of thinning must commence; if the weather is dry, and the tender corn breaks and leaves a bud to vegetate again, a small sharp paddle may be used, and passed beneath the roots of the stalk you wish to take up, leaving, in all cases, the largest and most vigorous plants. In preparing the soil for the reception of this crop, from 3 to 5 furrows may be thrown together, constituting a bed that may be split with a bull-tongue or small plough; a careful person may step the required distance and drop the corn to the toes, or a staff, passing through a piece of the required length at the bottom, can be used. This bedding, together with breaking the remaining balk, should be

done with good double ploughs, running from 6 to 8 and 10 inches deep, depending on depth of soil, and great care should be taken to break the ground *close*, that is, to leave no ridges unbroken between the furrow, so much inert soil, and a barrier to the diffusion of the roots; after this, one timely, deep and close ploughing, will in general, on all new lands ensure an abundant crop, all additional labour being injurious to the crop and time misspent. And any plantation must have been previously mismanaged, if more than two ploughings after balk-breaking, is required. In no case should a furrow be struck in a field of corn, after the first shoots and tassels appear; I have known good crops, with fine season and on rich soil, made after late ploughings, but never yet knew an instance in which the crop was not materially injured by it. When the last ploughing is given, every prudent landholder will provide a sufficiency of the stock or cowpea, to be sown down broadcast preceding the ploughs, say from 3 to 5 pecks per acre. These protect the lands from the intense rays of a summer's sun, prevent it from washing, leave a rich deposit of vine and leaf, do no injury whatever to the growing corn-crop, and when matured, which is after early frost, the corn may be gathered, and hogs designed for pork, turned upon the vine—from several year's experience, I am satisfied, corn itself not excepted, nothing will fatten hogs so soon as the pea; pork fed on these is found little if any inferior to that fattened on corn, though I prefer confining pork hogs in close pens, and feeding them a short time on corn, to give a little more consistency and hardness to the bacon. The pea, in the southern states, is decidedly preferable to clover, not only as it regards the rich deposite which is left by the vine, but because you reap a full harvest of corn from the same ground, the same year, and remedy a vast consumption of grain, and the vine if pulled and used at the proper time, is equal if not superior to clover or any other hay, all stock giving them the preference.

The advantages and necessity of *deep*, *close* ploughing, cannot be too strongly impressed upon the planter or farmer, it will ensure a good crop when the season is too wet, because the loose soil absorbs much more rain, before sobbing or saturating, and in a dry season, it has greater stores of moisture, does not bake or wash so soon as land which has been murdered by the ploughing with indifferent ploughs, consequently giving durability to the land, and in no case will it require more than half the number of ploughings.

ARATOR.

Art. XI.—*On Horizontal Ploughing.*

[from the American Farmer.]

Mr. Smith,—Ploughing on the level was first practised in this country nearly forty years ago, being introduced by Thomas Mann Randolph, afterwards Governor of Virginia of which an account was given by his father-in-law Thomas Jefferson, in a letter to George W. Jeffreys, author of the volume of excellent Agricultural Essays, published some years ago by Joseph Gales, at Raleigh. This mode of ploughing was first adopted in Albemarle, and is now general in all the contiguous parts of Virginia, and is not common elsewhere, though the practice is slowly extending itself. Not long before the death of Governor Randolph, the Agricultural Soeiety of Albemarle, voted him a gold medal in testimony of the value of his discovery. It is remarkable, that the only precise instructions we have on the subject, is the letter of Mr. Jefferson just mentioned. To what is so clear, as far as it goes, others may be unwilling to exhibit any thing that will be subjected to a comparison in endeavouring to supply the deficiency. In this account, the rafter-level is the instrument used to find the horizontal line—a more common one now is the cross, adjusted by a line and plummet, and sighted along the upper bar to sticks of the same height, which are moved and arranged along the field. Once laying off will be sufficient for a great number of years, perhaps forever, if the mode of plough ing I have recommended in my former paper is observed. This method deserves all the encomiums Mr. Jefferson has bestowed upon it, and all the honors awarded to Mr. Randolph. It has, as Mr. J. truly observes, been the salvation of the lands of Albemarle, and the country around, and is destined I have no doubt, to confer its benefits on every hilly country in which the spirit of improvement shall find its way.

Not with any view to detract from the well merited reputation of Mr. Randolph, which the fact I am about to mention does not, but with a view to excite inquiry and particularly to promote a search for old and forgotten knowledge, I will mention that the practice of horizontal ploughing did not wholly originate with Mr. Randolph. It is spoken of by Columella, who flourished in the reign of Tiberius Cæsar, and by several modern writers, by Jethro Tull, the father of English husbandry, in the time of Queen Anne, (who was a subscriber to his book,) and at the end of the last century, by Erasmus Darwin, in his beautiful work, "Phytologia," which first gave the Phylosophy of Agriculture.

Columella, on Agriculture, book ii. chap, iv. says, "in ploughing it must be especially observed, that the furrow be always drawn across the hill; for by this method the difficulty arising

from the acclivity of the ground is surmounted and broken, and the labour, both of men and cattle, is commodiously lessened."

Tull, Horse Hoeing Husbandry, chap. xviii. says, "many hundred hundred acres of good land, and many a good horse are spoiled, in ploughing against the hill, and against reason."

I cannote quote Darwin's words, as I have not now access to his book, but I remember his ideas. His object in horizontal ploughing was to arrest and carry off the superfluous water of the hills, an object never desirable or necessary in this country, so far as my observation has extended, but which, from Darwin's peculiar theory of the origin of springs, I infer is commonly or often the case in England—but then he proposes to accomplish his object by furrows, not exactly horizontal, but inclining so much as to carry off the water gently, in order to save the sides and bottoms of the hills from a repletion of moisure.

The advantages of horizontal ploughing, with us are, 1. It preserves all the water that falls in rain to nourish the roots of the plants. 2. It lessens the labour of teams and ploughmen. 3. It enables you to do better work, and 4. It prevents manure, decaying vegetables, and top soil from being washed away.

Several circumstances must combine to make this ploughing advantageous to the full extent of its capabilities.

The water furrows must be capacious and the beds mellowed deeply to enable both to hold a great deal of water. I have seen one instance of a field swept away in consequence of shallow ploughing upon a hard bed of clay that was impervious to moisture.

There are some soils and situations where it is utterly vain to attempt to retain all the water that falls, and prevent a break. As, 1. Where the hill is very steep when the highest furrow that could be thrown would only bring the surface to a level incapable of holding water, and this difficulty is increased in proportion to the extent of the declivity. 2. Where there exists an inequality of surface in consequence of former washes and breaks; and 3. When combined with either of the foregoing, the soil, from its own nature, or the absence of vegetable fibre, is deficient in powers of cohesion.

A remedy for these evils has been provided by Mr. Skipwith, who inherits and cultivates the extensive and well improved estate of the late Sir Peyton Skipwith, on the left bank of the Roanoke. It is to carry along at certain distances of from 20 to 50 or 100 yards asunder, ditches, of very moderate declination to some lateral drain. The furrows correspond with these ditches if the hill is very steep, and other circumstances are unfavorable; but if admissable, the furrows are level. This is found very efficient, and the process is simple and unexpensive.

Tull, every where distinguished by his *strong splash of common sense*, (as Dr. Johnson would term it,) in his remarks upon

the difficulty of having plans executed according to order, notices the odds between saying to the labourers, "go you, and do it," and "come let *us* do it." It is hard to prevail on those who are resolved not to be convinced; and what is not sanctioned by precedent or the judgment of the operator will be illy performed. In a country like this, where every thing is quietly submitted to overseers and negroes, and little is left to the owner's exertions and enterprize, it requires no little moral courage and talent for command to make such a considerable innovation upon the customs of a farm and neighbourhood as to introduce horizontal ploughing. A neighbour of mine once sent his overseer to Albemarle to examine and report upon this new and much talked-of practice. He might as well have sent his horse. There is a state and condition of ignorance firmly set against the introduction of every new idea. "Incredulity" says the old proverb, "is the wit of fools." Tull experienced all these difficulties in introducing his drill husbandry. "A gentleman," says he, "who consults his bailiff about entering upon a new scheme of husbandry, is likely to have about the same encouragement as a papist, having a mind to turn protestant would have, by asking the opinion of his confessor." I mention all this, not by way of discouragement, but to stimulate to perseverance, by showing the commonness of these difficulties. I have experienced them as well as others. Honest old Cæsar, my ploughman, protested firmly against my *horrid blunder-sort of ploughing*, as he termed it; and my overseer condemned the whole quite as positively. He had never seen any such *crooked business in old Virginia*, and therefore it must be wrong. I finally, by dint of authority, carried my point, but it required a firmness little less than that which put down the Polignac conspiracy. DE RUSTICA.

Art. XII.—*New Theory of Bots in Horses.*

[FROM THE AMERICAN FARMER.]

Watkinsville, August, 1, 1831.

Mr. Smith,—Should you think the following of sufficient value, I wish you would have it published in the Farmer. A late writer says he has tried all the remedies for bots without success. Had he stopped here I should have thought him a person of correct observation; but when he says "chickens chopped up and thrust down the throat of a horse while warm," he relies on

more than all the other remedies he has tried for the relief of a paroxysm of bots, I conceive prejudice has, even in spite of himself, got the better of his judgment. Also when he says, "hickory ashes and salts, given twice a week, is a preventive," judgment gives way to old prejudice. I say all horses have bots, more or less at particular seasons; that the most healthy and fat horses have them most abundant; that they never kill or injure horses; and that there is only one way to reduce them, which is to starve the horse, and use him badly, till he becomes very poor. I now give you my reasons for saying so. Those who have dissected many horses know, that poor horses never have near as many bots as fat ones; this is a fact that none can dispute, who have experience. Hence I say, make a horse poor and you have a certain means of diminishing the quantity of bots. I have never known a horse out of use, in a pasture, said to have died of bots; this I believe no one will dispute. Almost all the horses said to have died of bots, were fat, well kept horses, in use. This I believe will also be acknowledged. Now when we come to the real truth, very few, and I believe not one horse ever has died of bots; the death which colick caused, is put upon a very harmless insect, and which is, doubtless, necessary to the health of the horse. 'Tis said that dissection proves death to have been caused by bots, because the bowels are found perforated; 'tis not more certain, that rats will never eat a hole through a vessel at sea below water mark, than that bots will not eat a hole through the bowels of a living horse. If what I state as fact will not be taken as such, what I relate will prove it. A very fine saddle horse had the humerus dislocated; I purchased him for a trifle several weeks afterwards, thinking I could reduce the dislocation. The animal, otherwise, was in good health; he was bled till he fell; I then with ropes and other contrivances put the joint in place. I never saw a horse bleed so much before he fell, he got up and walked a few steps and fell dead. I had him opened immediately, and found a great many bots; and the part where they were most abundant very much perforated; some appeared to have just began to eat, and some had gone about half through. My brother's race horse killed himself leaping over a fence: he was the best horse I have ever seen, and very fat. A few hours after, he was opened and found to be very full of bots, and the parts nearly eat up. Now the fact is, that the bots, while the horse is living, never injure him; but so soon as he is dead, they begin to eat wherever they are, and very quickly make the paunch or gut into a honey comb. Hence, when colick kills a horse, his death is sudden, and his bowels being found perforated by bots, he is thought to be killed by them. Some years ago, a gentleman drove up to the tavern where I

was, about mid-day, in the heat of summer; he had a very fine pair of greys—the horses were taken out and put in the stable; but before they were fed his boy came to inform him that one horse had the bots. I went to look at him; he had all the symptoms horses generally have when thought to have bots; I begged to be allowed to prescribe; but a horse doctor's prescription was more valued; accordingly, a chicken's bowels were forced down the throat, the horse rapidly grew worse; another horse doctor told of wonders he had done with copperas; accordingly the horse was drenched with that. In a little time the other horse was taken the same way; the symptoms were exactly similar. I now again offered my services, stating to the gentleman, that as both were fed alike, drove alike, &c. 'twas reasonable they might both be taken with colick, at or near the same time. While examining this horse and arguing the case, news came that the first one was dead. The last one was now given up to my direction; he was bled till he fell, one ounce of laudanum poured down his throat, and his flanks well rubbed; in a little time he was well—the dead horse was now opened, and as I expected, many bots were found, and his bowels perforated. To convince this gentleman more fully, I now repeated experiments I had tried before. Twelve two ounce phials had bots put in them; one had milk put in it, another water, another nothing, as a standard; we then filled the others with a strong solution of copperas, a solution of arsenic, aqua fortis and water, a solution of corrosive sublimate, &c. Nine of them being filled with such things as were thought to be most likely to kill them. The arsenic, copperas, and aqua fortis, appeared to have no effect on them; they appeared fully as contented as those in the water. Those in the laudanum, however, moved less than the others, remaining apparently dead at the bottom of the phial, but moved when touched; after keeping until we were all satisfied that nothing that a horse could take would injure them, they were all thrown away.

But how comes it, that the bowels of horses are found perforated by bots? If we recollect the conduct of all insects that infest living animals, we should only expect bots to do as they do; after death, worms in the bowels of children crawl out at the mouth and anus very often; lice leave the dead, ticks lose their hold on dead cattle as soon as they die; fleas will not remain on dead dogs or dead hogs.—All insects that live on or in animals, endeavour to make their escape as soon as the animal dies; and bots, so soon as the horse dies, endeavour to make their escape by eating a passage out. Or else, knowing the animal is dead, eat a last meal from choice. Will it not appear strange that bots raised in the bowels of a horse, and never using flesh as food, should, all of them at the same time, change their appetite and commence eating his bowels?

In horses said to have bots, a common symptom is to bite their sides; this is said in fact to be the best symptom by which to distinguish bots from colick. Dissection will prove that, some horses that do not bite their sides, are very full of bots; and some that bite their sides do not bite near the place where the bots are found. Now all these facts and many more that I could mention, for I have paid much attention to the disease, convinces me, that bots never injure horses; but that horses in use, fed on dry food, subject to irregularities in exercise, in food, and in drink, are subject to colick, which often proves fatal. When opened after death, the bowels are found perforated by bots, and death is supposed to be caused by them. But if death occurs at some seasons from any cause, and the bowels are found perforated in the same way, which dissection will prove to be the case, doubts should arise as to the horse being killed by bots. If a horse have the symptoms said to be produced by bots, and be opened the moment of death, and his bowels be not found perforated, it should confirm us in our opinion that bots do not destroy horses; and dissection will always prove this to be fact. Observe, the horse is to be opened the moment he dies, for it is astonishing how quickly they commence eating after horse dies. If not opened with this express view, we shall always be too late. I had one horse taken in this way; every preparation was made before he died, and as soon as he breathed his last breath he was opened; the bots were found attached to the bowels, but appeared to have begun to eat; before the bowel could be taken out and carried home, it was perforated like a honey comb. Now, if, as I have stated, which any person can try, the bot lives apparently contented in arsenic, copperas, aqua fortis, &c. &c. what hope can we have that the horse's stomach can bear any thing that can injure bots? Some even think that melted wax can be poured down the throat of a horse, and hold bots fast when it cools; can any person think a horse's bowels could bear wax melting hot without killing the horse, or that it would not cool before it reached the bots? The fact is, stabled horses at particular seasons, discharge bots without taking any thing. I have several times found them in the stable when nothing had been given, and at those seasons when medicine is given, bots are found, if examination is made, and they will be found, if examination is made, when no medicine is given. Any person that will try experiments, often repeated, will come to the conclusion that we know of nothing that can be given to a horse that will destroy or even disturb the bots. If I could depend upon any thing from experiments I have tried on living bots out of the horse, it would be to stupify them with laudanum, and then give brisk cathartics. But now to come to the treatment: a horse is taken with a violent colick, rolling on the ground, biting his side,

sometimes much swollen, and at other times little or none; apparently in great pain. Tis pronounced a case of bots, and while we are preparing chicken bowels to cram down his throat, solutions of copperas, &c. &c. to destroy the bots, the animal dies with colick; an hour or so afterwards he is opened and his bowels found perforated by bots; we are satisfied he died from bots, without reflecting that these same bots were in him yesterday; that some cause more than mere whim in them must have caused them all to change their appetite so suddenly; that if they really caused the death of the horse there would be no preventive, as experiment would prove that nothing as yet known would disturb them before they would have time to kill the horse; and whether they might not have commenced perforating the bowels after the horse died. One experiment by opening a horse before he was fully dead would convince all that bots were not the cause of death. The proper way to treat the horse would be to give an ounce of laudanum as soon as he is taken, then bleed until he falls; while down give two quarts of castor oil, and rub his flanks hard and continually; if he is not swollen he will be almost certain to recover; but if he swells very much and becomes unable to rise, as a last resort, fearlessly plunge a long bladed knife into his flank just where there is a curl in the hair; much air will escape at the wound, and in most instances the horse will be better immediately. 'Tis probable, if this operation were performed sufficiently soon and boldly, it would seldom fail.

R. R. HARDEN.

PART III.

MISCELLANEOUS INTELLIGENCE.

A Farm School for the Poor.—We very much doubt whether a more really beneficent *will*, can be found on record than the one we are about to mention. We have no information of the character of the deceased, nor of his wealth or will, but what is contained in an advertisement, which we find in a South-Carolina paper. By this advertisement it appears that provision is made in the will of the late *John de la Howe* for the education of twenty-four poor children, twelve boys and twelve girls. The Trustees appointed to carry the will into effect, advertise for a teacher, to superintend a Farm School as planned and provided for in the will of the deceased. They have provided a good farm, suitable buildings, utensils, provisions and the necessary stock, and offer a liberal salary for a teacher. According to the plan of the school in the will, the children will live together as one family, and the expenses are to be defrayed out of the funds of the estate with the addition of the labour of the children on the farm. The qualifications required in the teacher shew that the intention of the liberal testator are to be carried into effect to their full extent. He must possess an unimpeachable moral character, and suitable habits and attainments to instruct in all the branches of English and scientific literature, subservient to agriculture and housewifery. We consider such a disposition of property by last will and testament, more honourable to the testator than monuments of brass and stone in commemoration of the deeds of the warrior, the statesman, or philosopher. It is, indeed, doing the most good in one's power with the least possible harm to our fellow-beings—and this is the acme of human greatness.—*Amer. Farmer.*

Domestic Silk.—We have been shown by Messrs. Pratt, Howe & Co., merchants of this city, a piece of silk levantine, similar to the foreign article for vestings, of the same fabric, which was manufactured in Mansfield, in this State. With the exception of 'finish,' which has not been brought to a complete state of perfection, the quality of the goods shown us will compare with the imported product. We understand from the Courant, that the inhabitants of Mansfield have for many years been engaged in raising silk worms, and that a large quantity of sewing silk has been annually manufactured there, from which a handsome income has been derived, but that until recently no attempts have been made at weaving. A manufactory of this kind is now in operation, with the most favourable prospect of success. We cannot but hope, that inasmach as a company has been organized, and arrangements made by several citizens of Mansfield to prosecute the business of silk manufacture, that our merchants will, by their patronage, secure to those who had engaged in the enterprize, a handsome profit on capital so laudably invested.—*Connecticut Mirror.*

Watering Fruit Trees with Soap Suds.—Mr. Fessenden,—If the following facts are worth publishing in your valuable paper, the whole or any part of them are at your disposal. In the spring of 1828, I purchased (as I suppos-

ed) a number of English cherry trees, which were in 1830, pronounced by good judges to be mazzards. As the trees had been set out two years, I felt unwilling to cut them down. In August I had them inocculated. Seeing a statement, I think, in the New-England Farmer, about that time, or previous, that soap suds was valuable for watering trees, I accordingly began by watering one of my cherry trees I found in a few weeks, the buds which had been put into the tree began to grow, and continued to grow until the frost came; while the buds in my other trees remained as they were. I began last spring to water the remainder of my cherry trees, which I continued to do through the summer. I have been well paid for fifteen minutes each week, thus employed. My trees have grown more the summer past, than they they have for three summers before, and now each tree has six branches, from three to five and a half feet in length, besides many side branches; all growing from what last spring were buds. I am satisfied, that trees watered weekly with suds, or sink water, may be brought to maturity in half the time that usually occurs. A CONSTANT READER.
Manchester, Ct. Dec. 15, 1831.—*Amer. Far.*

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Planting Peach Stones.—A gentleman, a successful cultivator of the peach, states it as his opinion that the principal cause why peach stones so frequently fail of coming up, after having been planted, is to be found in their being planted *too deep*. He thinks that the seed generally germinates, but if much weight of earth lies on the plume or first shoot, it is not able to force its way to the surface and of consequence perishes. He says that he has transplanted into his nursery five plants, produced from stones which had grown spontaneously under his peach trees. That a good method is to sow them *broad cast*, in autumn, and harrow them in with a light harrow, and when of suitable size transplant them into a nursery An inch, or an inch and a quarter in a light soil, this gentleman supposes is as deep as peach stones should ever be placed in the ground, for the purpose of reproduction.

Sir Humphrey Davy remarked that 'It is evident, that in all cases of tillage, the seeds should be sown so as to be fully exposed to the influence of the air. And one cause of the unproductiveness of cold, clayed, adhesive soil is, that the seed is coated with matter impermeable to air.—*N. E. Far.*

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Cocoa-Nut Squash.— Extract from a letter from L. Jenkins, Esq. Canandaigua, N. Y. to the Editor of the New-England Farmer. "I would here remark (although I trust the fact may be known to you) that the *cocoa-nut squash* is, in my opinion, one of the most valuable of the family of squashes. I received a few seeds last spring from a friend in New-York from which I raised a number; three of the largest weighed nearly 100 lbs. viz 34½, 34¾, and 24¾ lbs. They have a high colour and are of a very rich flavour and make a delicious pie If they possess the property of keeping a year, as I am informed they do, they must be truly valuable."

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Preserved Apples. Mr. Alexander Wash, of Lansingburgh, has presented us some apples the growth of the year 1830—the russet grown by Mr. Walsh, and preserved in bran and sand. Those in the latter were in the finest state. Also a moderate size red and white apple, raised by a farmer east of Lansingburg, and preserved in sand by Mr. F. Fordham, of the same place. This was as fair and in as sound a condition as though of the growth of this season.—*N. Y. Farmer.*

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Sago.—This is the starch of a tree which grows in the East Indies. The natives cut the stem and branches in two, and dig out the pith; this is then washed, passed through a perforated copper-plate, to reduce it to grains, which are then dried and form Sago of Commerce. From the same tree is obtained a liquor, as pleasant as our wine. From the cotton, with which the

leaves are covered when young, clothing is made; when older, the leaves are used instead of tiles for houses; the largest also serves for building; the two smaller yield a kind of hemp, fit for making ropes.—*N. E. Far.*

Mode of marking Sheep without any injury to the wool.—An English writer gives the following. Mark on either side of the *nose* of the sheep, the initials of the owners name, and on the opposite side any number by which he may choose to designate the particular sheep, by means of a small iron letter or figure about an inch long; which being dipped in common oil colours, mixed with turpentine to dry them more readily, if placed on the part described, will continue until the next shearing season. The process is easy, and will give the animal no pain; the marks cannot be readily obliterated, which is *not* the case with tatooing or cauterizing.—*N. E. Far.*

Sarsaparilla.—A new species of Sarsaparilla has been lately imported from the East Indies, which, it is said, by those who have given it a fair trial, is very superior to the Sarsaparilla that has hitherto been used in Europe. The cortical part is slightly aromatic, very grateful to the palate, and sits very pleasantly on the stomach; and the decoction of the ligneous part is more mucilaginous than any kind of sarsaparilla. On account of the aromatic quality of the cortical part being volatile, the decoction is directed to be made in a retort, and, when cool, the water collected in the receiver containing the essential oil, is to be added.—*Monthly Gazette of Practical Medicine.*

Pumpkin Bread.—Mr. Fleet,—Sir. As you have in some of your former numbers furnished us with directions for making rice bread, corn pudding, &c., I presume you will not take it amiss if I call the attention of your readers to the value of the *pumpkin* I presume there is not a vegetable on the face of the earth, more easily raised, or that is more productive; when it is considered that they will grow among corn, potatoes, or on any waste ground, and that the seed of one pumpkin will produce cart loads of fruit.

In the fall of 1829, I obtained the seed of a very superior pumpkin, part of which I planted the latter end of June following, on ground that I had raised two early crops of vegetables from, and comparatively of little value to me at that season of the year. I began to gather some of the fruit in October; it being extraordinary fine, I was anxious to save every grain of the seed, but the difficulty was how to dispose of the flesh or fruit. The common method of making it up into pies, would have been troublesome and expensive, and I thought them too good to feed swine with. I first gave some to my friends, on condition that they would save the seed, but they did not use them up fast enough; at length my wife tried experiments to work them up into bread, cakes, pies, puddings, &c., and it was not long before we discovered that they could be used so as to answer every purpose as Indian meal, and that our family and friends considered it preferable to any thing of the kind made in the ordinary way.

The pumpkin is first deprived of the rind, and afterwards cut up in slices and boiled; when soft enough it is strained in a culendar, and mashed up very fine; in this state it may be used up into pies, or mixed with flour for pudding, cake, &c. If it be intended for bread, it may be made up with wheaten flour in the proportion of one-third to half. The spunge must be first set in the ordinary way with yeast in the flour, and the pumpkin worked in as it begins to rise. My wife's rule is, to use as much pumpkin as will bring the dough to a proper degree of stiffness without water. Care should be taken that the pumpkin is not too hot to scald the leaven. It requires more baking than bread made entirely of wheat. I am aware that pumpkin bread is nothing new, but I am informed that farmers in the country use Indian meal with their pumpkins instead of wheaten flour, which makes it

more like pudding than bread. Those farmers that are in the habit of making their bread with wheat and Indian, may find a market for their meal more easily than for pumkins, and if they use these up into bread precisely in the same manner as they do their meal, I am persuaded they will find it very wholesome and palatable bread.

Yours, respectfully, T. BRIDGEMAN.

New-York, Nov. 21, 1831.

[We often have bread made in the above way in our family, and can attest its excellence and economy.—*Ed. Amer. Far.*

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Sugar from Potatoes.—The conversion of *starch* into *sugar* has long been known to chemists; and hopes were entertained that some new method of procuring the latter might render the *cane*, the *beet*, and the *maple* of less importance; but years have passed over without any successful attempt in the large way, unless that which is mentioned in the following very interesting account from the last number of Silliman's Journal should prove to be such. It was written by Samuel Guthrie, of Sackett's Harbour.

"I have been for some time persuaded, taking the data furnished by chemists as correct, that sugar might be advantageously made in towns remote from the Atlantic coast, from the potatoe; and one year ago, Capt. E. G. Palter, at my instance, with great ingenuity devised and constructed machinery and apparatus for prosecuting the business. As this is the first attempt within my knowledge, to make sugar from that on any considerable scale, I propose giving you a full account of the business so far as it has proceeded. *He has used in the manufacture three thousand five hundred bushels of potatoes.* A fair sample of the sugar, or rather molasses, for no crystallized pure sugar could be obtained, is now sent to you."

To this account Professor Silliman adds, "The molasses forwarded by Mr Guthrie is very rich, and apparently pure syrup, and has only a slight peculiarity of taste, a little like that of an oil, that could enable one to distinguish it from the best cane molasses. The syrup is nearly as rich as that from the sugar maple: and not improbably may yet afford a christallized sugar.—*Genesee Farmer.* D. T.

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Economy in Fattening Hogs.—I have thrown by my steamer for hog food and substituted a boiler, and I think with manifest advantage. The former consisted of a 60 gallon cask, over a potash kettle, badly set. I could only work off four or five casks a day, with great labour and trouble and the apparatus required to be luted with clay at every operation. With my new kettle, holding 30 gallons, which is a thin beautiful casting, I have cooked eight and nine barrels in half a day, and much better than by the steam process. This food consists of small refuse potatoes, of which I have nearly 100 bushels, or 15 per cent of my whole crop, pumpkins and a small quantity of Indian meal. A half day's boiling serves my hog family four or five days; and it is always kept prepared in advance. The actual expense of fattening hogs thus upon the refuse of the farm crop, is 50 to 75 per cent. less than feeding with dry corn.

The economy of my apparatus consists in setting the boiler so as to have all the advantage of the fire. The interior brick work is made to conform to the shape of the boiler, leaving an interval of four to six inches between them for the fire, round the whole exterior of the kettle, with the exception of a few inches at top, where the flange or rims rest upon the projecting brick. Thus the boiler is not only encompassed by the flame but he heat is augmented by radiation from the brick work. The fuel is burnt on a grate, which extends nearly to the kettle, four or five inches above the level of its bottom. My boiler being in operation while I am penning these remarks, I have ascertained, that a kettle of potatoes, with three pails of cold water, covered with boards, has been completely boiled in 18 minutes from the time they were put in, another boiling having been just previously taken out. My kettle was set by a son in his teens, without assistance, and was his first effort in masonry. J. BUEL.

Albany Nursery, Oct. 20, 1831.—*Genesee Farmer.*